

**OBSERVATIONS OF POSITION, OCEAN DEPTHS,
AND GRAVITY TAKEN FROM THE
FRAM II AND CAMP I DRIFTING ICE STATIONS**

by B. Allen, J. Ardai, K. Hunkins, T. Lee, T. G. Manley and W. Tiemann

CU-13-80 TECHNICAL REPORT No.13

Department of the Navy
Office of Naval Research
Contract N00014-76-C-0004

August 1980



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Lamont-Doherty Geological Observatory of Columbia University
New York, N. Y. 10964

September, 1980



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ABSTRACT

This report contains geophysical data collected by the Lamont group at the FRAM II and Camp I drifting stations. These data include station positions determined by satellite navigation, echo soundings, ice floe azimuths, magnetic declination and gravity readings.

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Introduction

FRAM II was a research station established on drifting pack ice to carry out underwater acoustic, geophysical, and oceanographic studies in the Arctic Ocean with primary financial support from the Office of Naval Research. Aircraft for establishing and maintaining the station were based at Nord, Greenland through cooperation of the Danish government and the Commission for Scientific Research in Greenland. FRAM II was established March 19, 1980 at $86^{\circ}51'N$ $023^{\circ}12'W$ and the scientific program began on March 31st after the camp had been relocated following ice breakup at the initial site. The program continued until May 4th when the camp was at $85^{\circ}46'N$ $023^{\circ}39'W$. Camp I was established later about 300 km north of FRAM II as a satellite station (fig. 1).

Investigators from Lamont-Doherty Geological Observatory carried out observations of position by satellite navigation, ocean depth and the earth's gravity field at FRAM II. Position by celestial navigation, and floe azimuth were observed at Camp I. These observations are reported here in the form of tables and figures. In order to make it available quickly, only the data are reported without detailed analysis or interpretation.

The Lamont group also conducted acoustic and oceanographic measurements which will be reported separately. The observations at FRAM II were made by Jay Ardai, Charles Monjo and Tai Lee. The measurements at Camp I were made by Barry Allen.

Navigation

All positions at FRAM II were determined with the U. S. Navy Transit satellite navigation system. Transit satellites circle the earth in 107-minute polar orbits at an altitude of approximately 100 km.



Figure 1. Locations of Fram II and Camp I Drifting Stations

Each satellite continuously transmits position data as a function of time. By measuring the change in the Doppler frequency of the received signals as the satellite approaches, passes, and recedes, the position of the station relative to the satellites path can be determined with great precision. The number of satellite passes at a given site over a given time will be greatest at the poles. In the Arctic the interval between fixes is therefore short.

The fixes at FRAM II were determined with a Magnavox MX 1502 satellite navigation set. The MX 1502 system was introduced in 1977 and is a rugged, portable, nearly automatic navigation system. The fixes and associated information are stored on magnetic tape. These data are also displayed visually and they were logged manually as often as possible in case the tape should malfunction.

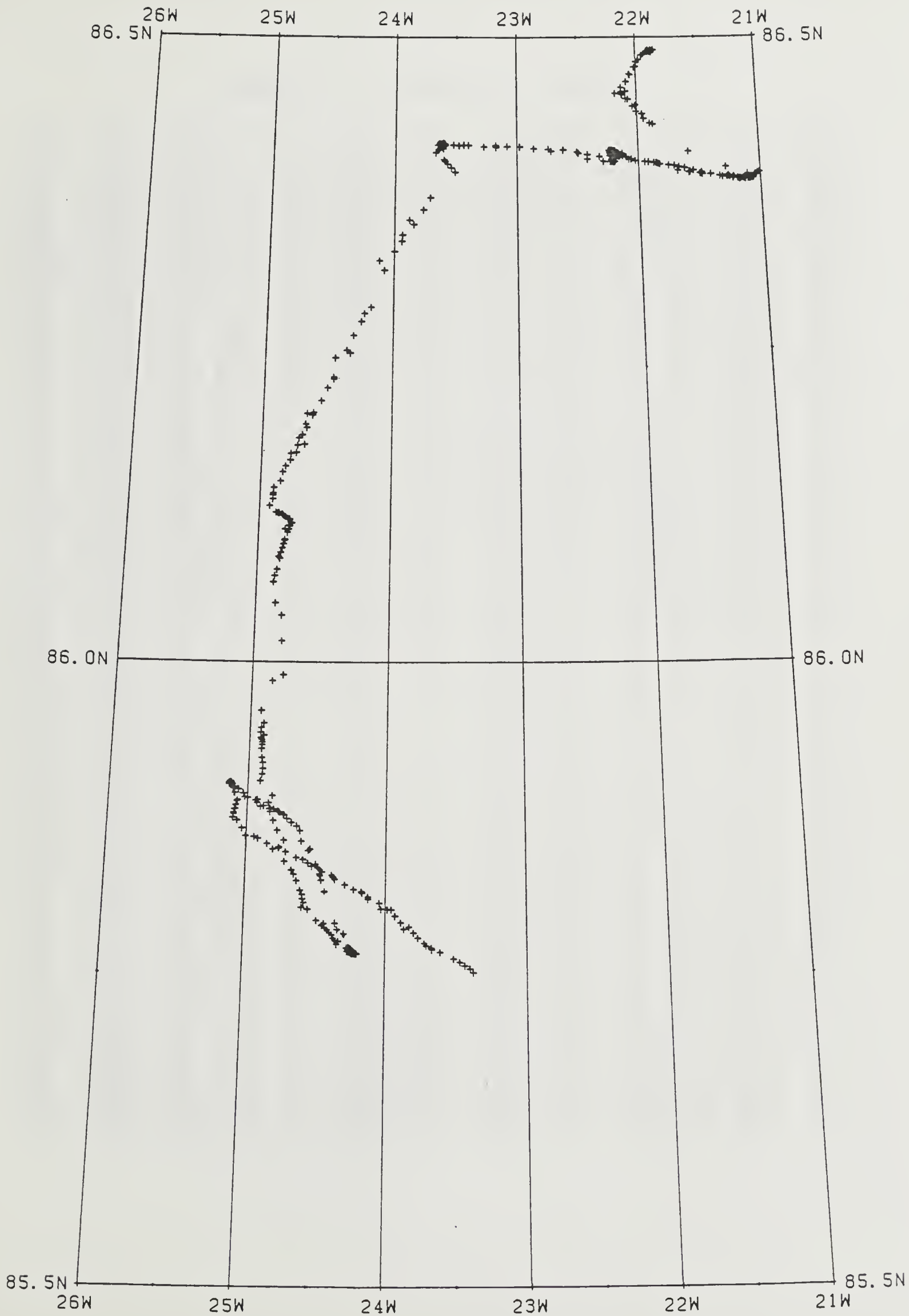
Fixes calculated with the MX 1502 sets are based on the World Geodetic System-1972 coordinates. "Standard deviations" in latitude and longitude based on Doppler data residuals are calculated automatically by the 1502 for each fix. All fixes with "standard deviations" greater than 90 m in latitude and 136 m in longitude were eliminated from the data set. These cutoff values were arrived at by calculating the mean and standard deviation of the "standard deviations" for all fixes of each instrument separately. All fixes with "standard deviations" greater than the mean plus one standard deviation were eliminated in two successive trials.

Although it had been intended to fix the positions of Camp I also with satellite navigation, no reliable fixes were obtained with the Magnavox 706 set used there and only celestial navigation was obtained. Sun shots were taken with a Wild T-2 theodolite on a daily basis when cloud cover permitted. The errors are estimated to be \pm 1 km for these sun fixes.

POSITIONS OF THE FRAM II DRIFTING STATION
DETERMINED BY THE MX1502 SATELLITE NAVIGATION SET

Key to Column Headings:

| | |
|-----------|---|
| SN | Serial number of satellite receiver unit |
| DY | Day |
| MON | Month |
| YEAR | Year |
| GMT | Greenwich mean time |
| LATITUDE | North latitude in decimal degrees |
| LONGITUDE | Longitude in decimal degrees, (negative implies west longitude) |
| EL | Maximum elevation of satellite above horizon in degrees |
| I | Number of iterations in the computation |
| DP | Number of 23/28 - second Doppler counts |
| SAT | Last three digits of satellite identification number |
| STDY | Standard deviation of latitude in meters |
| STDX | Standard deviation of longitude in meters |



FRAM 2

NAVIGATION - ORIGINAL

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDX |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|-------|
| 30 | 1 | APR | 1980 | 1215 | 86.489899 | -21.847313 | 81 | 3 | 32 | 140 | 62.0 | 85.0 |
| 30 | 1 | APR | 1980 | 1255 | 86.489853 | -21.867531 | 68 | 2 | 32 | 190 | 44.0 | 17.0 |
| 30 | 1 | APR | 1980 | 1922 | 86.489746 | -21.889484 | 64 | 3 | 32 | 140 | 61.0 | 29.0 |
| 30 | 1 | APR | 1980 | 2108 | 86.488754 | -21.893623 | 63 | 3 | 32 | 140 | 63.0 | 23.0 |
| 30 | 1 | APR | 1980 | 2125 | 86.488663 | -21.910271 | 76 | 2 | 32 | 110 | 53.0 | 79.0 |
| 30 | 1 | APR | 1980 | 2151 | 86.488419 | -21.877277 | 76 | 3 | 24 | 190 | 62.0 | 65.0 |
| 30 | 1 | APR | 1980 | 2254 | 86.488983 | -21.897675 | 66 | 2 | 33 | 140 | 54.0 | 39.0 |
| 30 | 2 | APR | 1980 | 41 | 86.488785 | -21.906738 | 74 | 2 | 21 | 140 | 62.0 | 121.0 |
| 30 | 2 | APR | 1980 | 100 | 86.488159 | -21.864868 | 82 | 3 | 28 | 110 | 47.0 | 122.0 |
| 30 | 2 | APR | 1980 | 124 | 86.488297 | -21.903023 | 70 | 3 | 30 | 190 | 50.0 | 17.0 |
| 30 | 2 | APR | 1980 | 247 | 86.488190 | -21.901268 | 73 | 3 | 24 | 110 | 50.0 | 48.0 |
| 30 | 2 | APR | 1980 | 310 | 86.486572 | -21.931911 | 73 | 2 | 26 | 190 | 83.0 | 54.0 |
| 30 | 2 | APR | 1980 | 602 | 86.485580 | -21.948883 | 76 | 3 | 27 | 140 | 71.0 | 60.0 |
| 30 | 2 | APR | 1980 | 748 | 86.481659 | -21.975189 | 72 | 2 | 26 | 140 | 87.0 | 38.0 |
| 30 | 2 | APR | 1980 | 809 | 86.479950 | -21.991932 | 72 | 3 | 30 | 110 | 37.0 | 29.0 |
| 30 | 2 | APR | 1980 | 831 | 86.480225 | -21.997570 | 80 | 3 | 29 | 190 | 47.0 | 78.0 |
| 30 | 2 | APR | 1980 | 936 | 86.476151 | -22.002205 | 72 | 3 | 32 | 140 | 57.0 | 28.0 |
| 30 | 2 | APR | 1980 | 1018 | 86.475708 | -22.016823 | 72 | 3 | 30 | 190 | 55.0 | 47.0 |
| 30 | 2 | APR | 1980 | 1123 | 86.470306 | -22.059082 | 77 | 3 | 29 | 140 | 62.0 | 57.0 |
| 30 | 2 | APR | 1980 | 1206 | 86.469925 | -22.051479 | 68 | 2 | 27 | 190 | 50.0 | 25.0 |
| 30 | 2 | APR | 1980 | 1353 | 86.464630 | -22.085144 | 69 | 3 | 31 | 190 | 48.0 | 24.0 |
| 30 | 2 | APR | 1980 | 1541 | 86.459747 | -22.131538 | 73 | 3 | 33 | 190 | 35.0 | 33.0 |
| 30 | 2 | APR | 1980 | 1644 | 86.456589 | -22.093361 | 73 | 3 | 30 | 140 | 51.0 | 71.0 |
| 30 | 2 | APR | 1980 | 1704 | 86.456161 | -22.128387 | 66 | 3 | 35 | 110 | 50.0 | 16.0 |
| 30 | 2 | APR | 1980 | 1728 | 86.454834 | -22.182293 | 81 | 3 | 31 | 190 | 52.0 | 115.0 |
| 30 | 2 | APR | 1980 | 1830 | 86.454132 | -22.126812 | 66 | 3 | 26 | 140 | 59.0 | 34.0 |
| 30 | 2 | APR | 1980 | 1850 | 86.453812 | -22.121002 | 67 | 3 | 35 | 110 | 44.0 | 19.0 |
| 30 | 2 | APR | 1980 | 2016 | 86.450546 | -22.093777 | 62 | 3 | 24 | 140 | 69.0 | 25.0 |
| 30 | 2 | APR | 1980 | 2037 | 86.450195 | -22.071793 | 73 | 3 | 24 | 110 | 58.0 | 58.0 |
| 30 | 2 | APR | 1980 | 2101 | 86.445267 | -22.013195 | 78 | 4 | 34 | 190 | 78.0 | 116.0 |
| 30 | 2 | APR | 1980 | 2202 | 86.444702 | -22.036976 | 64 | 3 | 26 | 140 | 55.0 | 29.0 |
| 30 | 2 | APR | 1980 | 2248 | 86.440323 | -22.007545 | 72 | 3 | 30 | 190 | 65.0 | 41.0 |
| 30 | 2 | APR | 1980 | 2349 | 86.438553 | -21.958839 | 70 | 3 | 32 | 140 | 45.0 | 47.0 |
| 30 | 3 | APR | 1980 | 35 | 86.434708 | -21.946003 | 69 | 3 | 30 | 190 | 64.0 | 20.0 |
| 30 | 3 | APR | 1980 | 158 | 86.430954 | -21.898708 | 76 | 3 | 27 | 110 | 41.0 | 53.0 |
| 30 | 3 | APR | 1980 | 221 | 86.430034 | -21.874065 | 71 | 3 | 33 | 190 | 67.0 | 37.0 |
| 30 | 3 | APR | 1980 | 929 | 86.408279 | -21.587898 | 75 | 3 | 20 | 190 | 55.0 | 60.0 |
| 30 | 3 | APR | 1980 | 1615 | 86.395782 | -21.285152 | 87 | 3 | 35 | 110 | 45.0 | 19.0 |
| 30 | 3 | APR | 1980 | 2134 | 86.389710 | -21.107971 | 78 | 3 | 33 | 110 | 60.0 | 103.0 |
| 30 | 3 | APR | 1980 | 2346 | 86.389450 | -21.046177 | 70 | 3 | 32 | 190 | 62.0 | 22.0 |
| 30 | 4 | APR | 1980 | 839 | 86.391296 | -21.007019 | 78 | 3 | 33 | 190 | 32.0 | 59.0 |
| 30 | 4 | APR | 1980 | 1214 | 86.390762 | -21.026722 | 63 | 3 | 39 | 190 | 38.0 | 14.0 |
| 30 | 4 | APR | 1980 | 1432 | 86.387432 | -21.058788 | 65 | 3 | 33 | 140 | 49.0 | 28.0 |
| 30 | 4 | APR | 1980 | 2046 | 86.387070 | -21.093258 | 74 | 3 | 25 | 110 | 52.0 | 74.0 |
| 30 | 4 | APR | 1980 | 2205 | 86.387294 | -21.083492 | 64 | 3 | 32 | 140 | 54.0 | 28.0 |
| 30 | 4 | APR | 1980 | 2257 | 86.385311 | -21.074696 | 71 | 3 | 31 | 190 | 61.0 | 36.0 |
| 30 | 4 | APR | 1980 | 2325 | 86.387222 | -21.074272 | 79 | 3 | 28 | 200 | 69.0 | 132.0 |
| 30 | 4 | APR | 1980 | 2352 | 86.386307 | -21.098175 | 71 | 3 | 29 | 140 | 58.0 | 63.0 |
| 30 | 5 | APR | 1980 | 20 | 86.386414 | -21.060352 | 85 | 3 | 29 | 110 | 36.0 | 119.0 |
| 30 | 5 | APR | 1980 | 44 | 86.386353 | -21.086720 | 69 | 3 | 32 | 190 | 67.0 | 19.0 |
| 30 | 5 | APR | 1980 | 207 | 86.386002 | -21.087448 | 75 | 3 | 34 | 110 | 36.0 | 41.0 |
| 30 | 5 | APR | 1980 | 230 | 86.386230 | -21.083401 | 71 | 3 | 33 | 190 | 82.0 | 44.0 |
| 30 | 5 | APR | 1980 | 257 | 86.385941 | -21.098267 | 66 | 3 | 30 | 200 | 62.0 | 36.0 |
| 30 | 5 | APR | 1980 | 354 | 86.386154 | -21.099934 | 68 | 3 | 35 | 110 | 41.0 | 21.0 |
| 30 | 5 | APR | 1980 | 416 | 86.385406 | -21.126553 | 78 | 3 | 31 | 190 | 71.0 | 91.0 |
| 30 | 5 | APR | 1980 | 511 | 86.385895 | -21.131268 | 77 | 3 | 22 | 140 | 70.0 | 85.0 |
| 30 | 5 | APR | 1980 | 629 | 86.385551 | -21.133831 | 71 | 3 | 22 | 200 | 53.0 | 46.0 |
| 30 | 5 | APR | 1980 | 658 | 86.386337 | -21.126022 | 72 | 3 | 28 | 140 | 59.0 | 29.0 |
| 30 | 5 | APR | 1980 | 815 | 86.385529 | -21.174397 | 79 | 3 | 24 | 200 | 60.0 | 121.0 |
| 30 | 5 | APR | 1980 | 846 | 86.386551 | -21.144089 | 71 | 3 | 30 | 140 | 65.0 | 25.0 |
| 30 | 5 | APR | 1980 | 1124 | 86.386200 | -21.164291 | 68 | 3 | 29 | 190 | 53.0 | 33.0 |
| 30 | 5 | APR | 1980 | 1220 | 86.386366 | -21.185551 | 82 | 4 | 28 | 140 | 72.0 | 104.0 |
| 30 | 5 | APR | 1980 | 1312 | 86.386755 | -21.188393 | 68 | 3 | 31 | 190 | 55.0 | 24.0 |
| 30 | 5 | APR | 1980 | 1331 | 86.386093 | -21.186642 | 70 | 3 | 32 | 200 | 82.0 | 57.0 |
| 30 | 5 | APR | 1980 | 1500 | 86.387604 | -21.221802 | 71 | 3 | 35 | 190 | 48.0 | 34.0 |
| 30 | 5 | APR | 1980 | 1516 | 86.386245 | -21.226353 | 67 | 3 | 30 | 200 | 76.0 | 24.0 |
| 30 | 5 | APR | 1980 | 1554 | 86.387497 | -21.224190 | 75 | 3 | 28 | 140 | 69.0 | 118.0 |
| 30 | 5 | APR | 1980 | 1624 | 86.387360 | -21.251598 | 67 | 3 | 24 | 110 | 68.0 | 19.0 |

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDY |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|-------|
| 30 | 5 | APR | 1980 | 1647 | 86.388489 | -21.264374 | 79 | 3 | 36 | 190 | 34.0 | 59.0 |
| 30 | 5 | APR | 1980 | 1701 | 86.387894 | -21.270779 | 68 | 3 | 26 | 200 | 89.0 | 43.0 |
| 30 | 5 | APR | 1980 | 1740 | 86.387970 | -21.278210 | 67 | 3 | 26 | 140 | 56.0 | 47.0 |
| 30 | 5 | APR | 1980 | 1810 | 86.387558 | -21.311535 | 66 | 3 | 29 | 110 | 43.0 | 17.0 |
| 30 | 5 | APR | 1980 | 1926 | 86.388214 | -21.336311 | 63 | 3 | 22 | 140 | 70.0 | 29.0 |
| 30 | 5 | APR | 1980 | 2113 | 86.389999 | -21.409309 | 63 | 3 | 30 | 140 | 55.0 | 25.0 |
| 30 | 5 | APR | 1980 | 2144 | 86.389847 | -21.480129 | 79 | 3 | 32 | 110 | 60.0 | 120.0 |
| 30 | 5 | APR | 1980 | 2259 | 86.391281 | -21.485012 | 67 | 3 | 28 | 140 | 61.0 | 53.0 |
| 30 | 5 | APR | 1980 | 2354 | 86.390488 | -21.498119 | 69 | 3 | 25 | 190 | 87.0 | 28.0 |
| 30 | 6 | APR | 1980 | 46 | 86.392181 | -21.576897 | 76 | 3 | 29 | 140 | 48.0 | 112.0 |
| 30 | 6 | APR | 1980 | 118 | 86.393082 | -21.549728 | 79 | 3 | 34 | 110 | 41.0 | 70.0 |
| 30 | 6 | APR | 1980 | 140 | 86.391220 | -21.587662 | 70 | 3 | 23 | 190 | 86.0 | 36.0 |
| 30 | 6 | APR | 1980 | 305 | 86.394852 | -21.623360 | 71 | 3 | 35 | 110 | 37.0 | 26.0 |
| 30 | 6 | APR | 1980 | 327 | 86.392670 | -21.680244 | 74 | 3 | 26 | 190 | 79.0 | 73.0 |
| 30 | 6 | APR | 1980 | 419 | 86.395874 | -21.668499 | 83 | 3 | 32 | 140 | 62.0 | 105.0 |
| 30 | 6 | APR | 1980 | 453 | 86.396744 | -21.708302 | 67 | 3 | 36 | 110 | 41.0 | 15.0 |
| 30 | 6 | APR | 1980 | 606 | 86.397171 | -21.755718 | 74 | 3 | 31 | 140 | 53.0 | 38.0 |
| 30 | 6 | APR | 1980 | 754 | 86.398026 | -21.826912 | 71 | 3 | 31 | 140 | 51.0 | 17.0 |
| 30 | 6 | APR | 1980 | 828 | 86.398575 | -21.845257 | 74 | 3 | 32 | 110 | 41.0 | 40.0 |
| 30 | 6 | APR | 1980 | 848 | 86.399170 | -21.856335 | 77 | 4 | 26 | 190 | 45.0 | 73.0 |
| 30 | 6 | APR | 1980 | 941 | 86.399246 | -21.875278 | 73 | 3 | 32 | 140 | 61.0 | 29.0 |
| 30 | 6 | APR | 1980 | 1128 | 86.400040 | -21.919441 | 79 | 3 | 29 | 140 | 66.0 | 71.0 |
| 30 | 6 | APR | 1980 | 1349 | 86.399994 | -21.949690 | 75 | 3 | 36 | 110 | 53.0 | 68.0 |
| 30 | 6 | APR | 1980 | 1536 | 86.400848 | -22.026836 | 68 | 3 | 35 | 110 | 52.0 | 29.0 |
| 30 | 6 | APR | 1980 | 1648 | 86.402344 | -22.059628 | 71 | 3 | 26 | 140 | 49.0 | 51.0 |
| 30 | 6 | APR | 1980 | 1722 | 86.402100 | -22.079376 | 66 | 3 | 36 | 110 | 52.0 | 15.0 |
| 30 | 6 | APR | 1980 | 1835 | 86.403839 | -22.100681 | 64 | 3 | 34 | 140 | 48.0 | 26.0 |
| 30 | 6 | APR | 1980 | 2021 | 86.404831 | -22.128040 | 62 | 3 | 33 | 140 | 50.0 | 17.0 |
| 30 | 6 | APR | 1980 | 2055 | 86.404739 | -22.163242 | 75 | 3 | 35 | 110 | 51.0 | 67.0 |
| 30 | 6 | APR | 1980 | 2207 | 86.404785 | -22.154503 | 65 | 3 | 31 | 140 | 68.0 | 42.0 |
| 30 | 6 | APR | 1980 | 2305 | 86.405752 | -22.148586 | 71 | 3 | 34 | 190 | 60.0 | 28.0 |
| 30 | 7 | APR | 1980 | 29 | 86.406769 | -22.134842 | 83 | 3 | 30 | 110 | 40.0 | 118.0 |
| 30 | 7 | APR | 1980 | 52 | 86.406265 | -22.169289 | 69 | 3 | 39 | 190 | 56.0 | 15.0 |
| 30 | 7 | APR | 1980 | 216 | 86.407318 | -22.172504 | 74 | 3 | 35 | 110 | 42.0 | 43.0 |
| 30 | 7 | APR | 1980 | 236 | 86.406479 | -22.195004 | 72 | 3 | 36 | 190 | 57.0 | 36.0 |
| 30 | 7 | APR | 1980 | 514 | 86.407928 | -22.207676 | 78 | 3 | 29 | 140 | 62.0 | 70.0 |
| 30 | 7 | APR | 1980 | 701 | 86.408981 | -22.224430 | 72 | 3 | 26 | 140 | 58.0 | 33.0 |
| 30 | 7 | APR | 1980 | 758 | 86.408936 | -22.210117 | 31 | 3 | 33 | 190 | 32.0 | 74.0 |
| 30 | 7 | APR | 1980 | 848 | 86.408500 | -22.230171 | 71 | 3 | 31 | 140 | 67.0 | 23.0 |
| 30 | 7 | APR | 1980 | 926 | 86.409256 | -22.248287 | 79 | 3 | 32 | 110 | 35.0 | 64.0 |
| 30 | 7 | APR | 1980 | 946 | 86.408475 | -22.222645 | 72 | 3 | 30 | 190 | 42.0 | 35.0 |
| 30 | 7 | APR | 1980 | 1036 | 86.409500 | -22.232277 | 75 | 3 | 23 | 140 | 72.0 | 44.0 |
| 30 | 7 | APR | 1980 | 1133 | 86.409119 | -22.222736 | 68 | 3 | 35 | 190 | 42.0 | 20.0 |
| 30 | 7 | APR | 1980 | 1300 | 86.409073 | -22.196270 | 79 | 3 | 24 | 110 | 63.0 | 117.0 |
| 30 | 7 | APR | 1980 | 1321 | 86.408844 | -22.228855 | 68 | 3 | 35 | 190 | 37.0 | 15.0 |
| 30 | 7 | APR | 1980 | 1508 | 86.408844 | -22.228935 | 72 | 3 | 33 | 190 | 49.0 | 37.0 |
| 30 | 7 | APR | 1980 | 1556 | 86.408371 | -22.204277 | 75 | 3 | 31 | 140 | 52.0 | 91.0 |
| 30 | 7 | APR | 1980 | 1634 | 86.408447 | -22.222660 | 66 | 3 | 34 | 110 | 54.0 | 19.0 |
| 30 | 7 | APR | 1980 | 1656 | 86.408646 | -22.245712 | 80 | 3 | 36 | 190 | 45.0 | 89.0 |
| 30 | 7 | APR | 1980 | 1743 | 86.408783 | -22.220341 | 67 | 3 | 31 | 140 | 57.0 | 46.0 |
| 30 | 7 | APR | 1980 | 1820 | 86.408310 | -22.225655 | 67 | 3 | 35 | 110 | 54.0 | 21.0 |
| 30 | 7 | APR | 1980 | 2115 | 86.408453 | -22.226643 | 63 | 3 | 29 | 140 | 57.0 | 22.0 |
| 30 | 7 | APR | 1980 | 2302 | 86.408515 | -22.225697 | 68 | 3 | 15 | 140 | 88.0 | 117.0 |
| 30 | 7 | APR | 1980 | 2333 | 86.408005 | -22.201035 | 78 | 3 | 24 | 200 | 65.0 | 109.0 |
| 30 | 8 | APR | 1980 | 2 | 86.407305 | -22.217037 | 69 | 3 | 29 | 190 | 62.0 | 21.0 |
| 30 | 8 | APR | 1980 | 48 | 86.408554 | -22.231750 | 76 | 3 | 25 | 140 | 55.0 | 116.0 |
| 30 | 8 | APR | 1980 | 119 | 86.407805 | -22.212776 | 70 | 3 | 23 | 200 | 71.0 | 61.0 |
| 30 | 8 | APR | 1980 | 146 | 86.406540 | -22.227818 | 70 | 4 | 28 | 190 | 72.0 | 30.0 |
| 30 | 8 | APR | 1980 | 305 | 86.407104 | -22.210068 | 66 | 3 | 24 | 200 | 87.0 | 32.0 |
| 30 | 8 | APR | 1980 | 336 | 86.406357 | -22.230408 | 76 | 3 | 32 | 190 | 87.0 | 87.0 |
| 30 | 8 | APR | 1980 | 422 | 86.406937 | -22.203239 | 81 | 7 | 22 | 140 | 68.0 | 121.0 |
| 30 | 8 | APR | 1980 | 451 | 86.406547 | -22.216362 | 66 | 3 | 22 | 200 | 76.0 | 30.0 |
| 30 | 8 | APR | 1980 | 756 | 86.405914 | -22.219345 | 71 | 4 | 25 | 140 | 80.0 | 27.0 |
| 30 | 8 | APR | 1980 | 856 | 86.405914 | -22.198502 | 76 | 3 | 34 | 190 | 43.0 | 56.0 |
| 30 | 8 | APR | 1980 | 944 | 86.406525 | -22.219971 | 72 | 3 | 28 | 190 | 61.0 | 29.0 |
| 30 | 8 | APR | 1980 | 1044 | 86.406006 | -22.205181 | 69 | 3 | 31 | 190 | 54.0 | 38.0 |
| 30 | 8 | APR | 1980 | 1130 | 86.405533 | -22.232883 | 79 | 3 | 30 | 140 | 67.0 | 73.0 |
| 30 | 8 | APR | 1980 | 1231 | 86.405834 | -22.218517 | 67 | 3 | 36 | 190 | 38.0 | 15.0 |

FRAM 2

NAVIGATION - ORIGINAL

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDX |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|-------|
| 30 | 8 | APR | 1980 | 1419 | 86.404968 | -22.224712 | 70 | 3 | 32 | 190 | 61.0 | 36.0 |
| 30 | 8 | APR | 1980 | 1524 | 86.405258 | -22.218170 | 66 | 3 | 32 | 200 | 77.0 | 23.0 |
| 30 | 8 | APR | 1980 | 1545 | 86.404724 | -22.207981 | 68 | 3 | 36 | 110 | 49.0 | 24.0 |
| 30 | 8 | APR | 1980 | 1606 | 86.405151 | -22.226074 | 76 | 3 | 30 | 190 | 51.0 | 62.0 |
| 30 | 8 | APR | 1980 | 1651 | 86.407379 | -22.236729 | 70 | 3 | 30 | 140 | 90.0 | 93.0 |
| 30 | 8 | APR | 1980 | 1837 | 86.405334 | -22.218830 | 64 | 3 | 31 | 140 | 65.0 | 53.0 |
| 30 | 8 | APR | 1980 | 1854 | 86.404724 | -22.237537 | 74 | 3 | 28 | 200 | 86.0 | 95.0 |
| 30 | 8 | APR | 1980 | 2024 | 86.404922 | -22.214836 | 62 | 3 | 26 | 140 | 59.0 | 22.0 |
| 30 | 8 | APR | 1980 | 2210 | 86.405762 | -22.216770 | 65 | 3 | 31 | 140 | 62.0 | 39.0 |
| 30 | 8 | APR | 1980 | 2356 | 86.405243 | -22.227966 | 72 | 3 | 29 | 140 | 53.0 | 75.0 |
| 30 | 9 | APR | 1980 | 11 | 86.405365 | -22.192245 | 74 | 3 | 23 | 200 | 59.0 | 84.0 |
| 30 | 9 | APR | 1980 | 100 | 86.404709 | -22.213730 | 69 | 3 | 28 | 190 | 85.0 | 27.0 |
| 30 | 9 | APR | 1980 | 157 | 86.406281 | -22.218128 | 68 | 3 | 22 | 200 | 75.0 | 48.0 |
| 30 | 9 | APR | 1980 | 246 | 86.405197 | -22.217522 | 72 | 3 | 23 | 190 | 70.0 | 53.0 |
| 30 | 9 | APR | 1980 | 517 | 86.404572 | -22.195885 | 77 | 3 | 31 | 140 | 56.0 | 50.0 |
| 30 | 9 | APR | 1980 | 704 | 86.403931 | -22.205799 | 72 | 4 | 23 | 140 | 59.0 | 26.0 |
| 30 | 9 | APR | 1980 | 807 | 86.404449 | -22.200069 | 80 | 3 | 24 | 190 | 47.0 | 110.0 |
| 30 | 9 | APR | 1980 | 851 | 86.404190 | -22.207420 | 72 | 3 | 29 | 140 | 62.0 | 23.0 |
| 30 | 9 | APR | 1980 | 954 | 86.404236 | -22.209904 | 72 | 3 | 27 | 190 | 63.0 | 50.0 |
| 30 | 9 | APR | 1980 | 1038 | 86.403961 | -22.215225 | 76 | 3 | 32 | 140 | 55.0 | 42.0 |
| 30 | 9 | APR | 1980 | 1142 | 86.403915 | -22.207756 | 68 | 3 | 33 | 190 | 50.0 | 23.0 |
| 30 | 9 | APR | 1980 | 1310 | 86.403534 | -22.176655 | 77 | 3 | 36 | 110 | 50.0 | 83.0 |
| 30 | 9 | APR | 1980 | 1330 | 86.403412 | -22.212524 | 68 | 3 | 27 | 190 | 70.0 | 32.0 |
| 30 | 9 | APR | 1980 | 1643 | 86.403198 | -22.209442 | 66 | 3 | 35 | 110 | 51.0 | 16.0 |
| 30 | 9 | APR | 1980 | 1932 | 86.403122 | -22.201714 | 63 | 3 | 14 | 140 | 74.0 | 44.0 |
| 30 | 9 | APR | 1980 | 2016 | 86.402542 | -22.225075 | 73 | 3 | 34 | 110 | 45.0 | 46.0 |
| 30 | 9 | APR | 1980 | 2038 | 86.402679 | -22.188545 | 78 | 4 | 24 | 190 | 80.0 | 119.0 |
| 30 | 9 | APR | 1980 | 2225 | 86.402664 | -22.200466 | 71 | 3 | 36 | 190 | 78.0 | 48.0 |
| 30 | 10 | APR | 1980 | 12 | 86.402328 | -22.205868 | 69 | 4 | 29 | 190 | 80.0 | 22.0 |
| 30 | 10 | APR | 1980 | 137 | 86.402843 | -22.197216 | 76 | 3 | 36 | 110 | 39.0 | 48.0 |
| 30 | 10 | APR | 1980 | 158 | 86.402557 | -22.211929 | 71 | 3 | 37 | 190 | 59.0 | 28.0 |
| 30 | 10 | APR | 1980 | 325 | 86.402374 | -22.208195 | 69 | 3 | 36 | 110 | 37.0 | 21.0 |
| 30 | 10 | APR | 1980 | 344 | 86.401596 | -22.219475 | 76 | 3 | 28 | 190 | 68.0 | 71.0 |
| 30 | 10 | APR | 1980 | 422 | 86.401325 | -22.211689 | 66 | 3 | 29 | 200 | 60.0 | 25.0 |
| 30 | 10 | APR | 1980 | 906 | 86.400696 | -22.208187 | 75 | 3 | 38 | 190 | 49.0 | 55.0 |
| 30 | 10 | APR | 1980 | 1053 | 86.400391 | -22.211487 | 69 | 3 | 25 | 190 | 61.0 | 30.0 |
| 30 | 10 | APR | 1980 | 1134 | 86.400833 | -22.228611 | 80 | 3 | 25 | 140 | 72.0 | 85.0 |
| 30 | 10 | APR | 1980 | 1240 | 86.400986 | -22.215912 | 67 | 3 | 28 | 190 | 61.0 | 29.0 |
| 30 | 10 | APR | 1980 | 1408 | 86.400757 | -22.199867 | 72 | 3 | 33 | 110 | 51.0 | 48.0 |
| 30 | 10 | APR | 1980 | 1423 | 86.400452 | -22.222637 | 70 | 3 | 34 | 190 | 47.0 | 31.0 |
| 30 | 10 | APR | 1980 | 1615 | 86.401031 | -22.224916 | 77 | 3 | 28 | 190 | 54.0 | 72.0 |
| 30 | 10 | APR | 1980 | 1654 | 86.400394 | -22.208912 | 69 | 3 | 28 | 140 | 60.0 | 59.0 |
| 30 | 10 | APR | 1980 | 1741 | 86.400574 | -22.213970 | 66 | 3 | 33 | 110 | 49.0 | 17.0 |
| 30 | 10 | APR | 1980 | 1840 | 86.400333 | -22.212280 | 64 | 3 | 33 | 140 | 53.0 | 25.0 |
| 30 | 10 | APR | 1980 | 1928 | 86.400452 | -22.222580 | 70 | 3 | 35 | 110 | 48.0 | 34.0 |
| 30 | 10 | APR | 1980 | 2026 | 86.400526 | -22.214828 | 63 | 3 | 32 | 140 | 40.0 | 16.0 |
| 30 | 10 | APR | 1980 | 2114 | 86.400192 | -22.237793 | 78 | 3 | 32 | 110 | 59.0 | 105.0 |
| 30 | 10 | APR | 1980 | 2136 | 86.400330 | -22.195793 | 74 | 3 | 32 | 190 | 88.0 | 69.0 |
| 30 | 10 | APR | 1980 | 2213 | 86.400757 | -22.217140 | 66 | 3 | 32 | 140 | 50.0 | 35.0 |
| 30 | 10 | APR | 1980 | 2322 | 86.400299 | -22.204556 | 69 | 3 | 38 | 190 | 66.0 | 23.0 |
| 30 | 10 | APR | 1980 | 2359 | 86.401001 | -22.222057 | 73 | 3 | 28 | 140 | 59.0 | 94.0 |
| 30 | 11 | APR | 1980 | 109 | 86.400299 | -22.218014 | 69 | 3 | 28 | 190 | 53.0 | 18.0 |
| 30 | 11 | APR | 1980 | 256 | 86.400772 | -22.224281 | 74 | 3 | 31 | 190 | 63.0 | 51.0 |
| 30 | 11 | APR | 1980 | 423 | 86.400223 | -22.211159 | 68 | 3 | 32 | 110 | 58.0 | 22.0 |
| 30 | 11 | APR | 1980 | 500 | 86.400520 | -22.216156 | 67 | 3 | 33 | 200 | 57.0 | 29.0 |
| 30 | 11 | APR | 1980 | 520 | 86.400421 | -22.201302 | 76 | 3 | 36 | 140 | 52.0 | 43.0 |
| 30 | 11 | APR | 1980 | 816 | 86.400909 | -22.190842 | 78 | 5 | 24 | 190 | 45.0 | 86.0 |
| 30 | 11 | APR | 1980 | 854 | 86.401077 | -22.213264 | 72 | 3 | 31 | 140 | 67.0 | 26.0 |
| 30 | 11 | APR | 1980 | 1004 | 86.400589 | -22.206573 | 71 | 3 | 33 | 190 | 48.0 | 34.0 |
| 30 | 11 | APR | 1980 | 1042 | 86.400452 | -22.222622 | 76 | 3 | 30 | 140 | 63.0 | 51.0 |
| 30 | 11 | APR | 1980 | 1151 | 86.400360 | -22.217670 | 67 | 3 | 29 | 190 | 56.0 | 25.0 |
| 30 | 11 | APR | 1980 | 1526 | 86.400452 | -22.224480 | 74 | 3 | 36 | 190 | 51.0 | 52.0 |
| 30 | 11 | APR | 1980 | 1602 | 86.399658 | -22.190487 | 73 | 3 | 25 | 140 | 60.0 | 80.0 |
| 30 | 11 | APR | 1980 | 1652 | 86.400284 | -22.211590 | 68 | 3 | 35 | 110 | 47.0 | 14.0 |
| 30 | 11 | APR | 1980 | 1748 | 86.401093 | -22.211746 | 66 | 3 | 23 | 140 | 56.0 | 29.0 |
| 30 | 11 | APR | 1980 | 1839 | 86.400391 | -22.217567 | 68 | 3 | 35 | 110 | 48.0 | 24.0 |
| 30 | 12 | APR | 1980 | 428 | 86.400543 | -22.201954 | 80 | 3 | 31 | 140 | 68.0 | 83.0 |
| 30 | 12 | APR | 1980 | 614 | 86.400146 | -22.213306 | 73 | 3 | 29 | 140 | 64.0 | 43.0 |

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDY | STDY |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|-------|------|
| 30 | 12 | APR | 1980 | 802 | 86.400253 | -22.212875 | 71 | 3 | 23 | 140 | 81.0 | 34.0 | |
| 30 | 12 | APR | 1980 | 1136 | 86.400955 | -22.234055 | 80 | 3 | 26 | 140 | 65.0 | 83.0 | |
| 30 | 12 | APR | 1980 | 1249 | 86.400620 | -22.219509 | 67 | 3 | 33 | 190 | 47.0 | 18.0 | |
| 30 | 12 | APR | 1980 | 1510 | 86.401123 | -22.186779 | 77 | 4 | 28 | 140 | 48.0 | 108.0 | |
| 30 | 12 | APR | 1980 | 1604 | 86.400925 | -22.208660 | 67 | 3 | 34 | 110 | 62.0 | 22.0 | |
| 30 | 12 | APR | 1980 | 1624 | 86.401169 | -22.225094 | 78 | 3 | 33 | 190 | 56.0 | 95.0 | |
| 30 | 12 | APR | 1980 | 1656 | 86.400833 | -22.193958 | 68 | 3 | 32 | 140 | 51.0 | 46.0 | |
| 30 | 12 | APR | 1980 | 1843 | 86.400421 | -22.206715 | 63 | 3 | 35 | 140 | 44.0 | 19.0 | |
| 30 | 12 | APR | 1980 | 2029 | 86.400543 | -22.213943 | 63 | 3 | 29 | 140 | 39.0 | 17.0 | |
| 30 | 12 | APR | 1980 | 2124 | 86.400345 | -22.234436 | 79 | 3 | 31 | 110 | 60.0 | 132.0 | |
| 30 | 12 | APR | 1980 | 2215 | 86.400146 | -22.220341 | 67 | 3 | 28 | 140 | 54.0 | 41.0 | |
| 30 | 12 | APR | 1980 | 2331 | 86.400513 | -22.192871 | 69 | 3 | 38 | 190 | 72.0 | 22.0 | |
| 30 | 13 | APR | 1980 | 2 | 86.400345 | -22.233501 | 74 | 3 | 28 | 140 | 48.0 | 83.0 | |
| 30 | 13 | APR | 1980 | 522 | 86.400101 | -22.199078 | 76 | 3 | 29 | 140 | 60.0 | 51.0 | |
| 30 | 13 | APR | 1980 | 710 | 86.400726 | -22.206894 | 72 | 3 | 23 | 140 | 58.0 | 27.0 | |
| 30 | 13 | APR | 1980 | 825 | 86.401962 | -22.224789 | 77 | 3 | 28 | 190 | 67.0 | 90.0 | |
| 30 | 13 | APR | 1980 | 857 | 86.400146 | -22.212070 | 72 | 3 | 30 | 140 | 59.0 | 24.0 | |
| 30 | 13 | APR | 1980 | 1012 | 86.400177 | -22.203423 | 70 | 3 | 31 | 190 | 52.0 | 33.0 | |
| 30 | 13 | APR | 1980 | 1044 | 86.400223 | -22.218540 | 78 | 3 | 26 | 140 | 66.0 | 57.0 | |
| 30 | 13 | APR | 1980 | 1200 | 86.400803 | -22.206409 | 67 | 3 | 31 | 190 | 43.0 | 18.0 | |
| 30 | 13 | APR | 1980 | 1503 | 86.400085 | -22.210171 | 66 | 3 | 29 | 200 | 73.0 | 24.0 | |
| 30 | 13 | APR | 1980 | 1604 | 86.400360 | -22.200291 | 72 | 3 | 33 | 140 | 45.0 | 60.0 | |
| 30 | 13 | APR | 1980 | 1648 | 86.400421 | -22.217697 | 67 | 3 | 25 | 200 | 78.0 | 41.0 | |
| 30 | 13 | APR | 1980 | 1751 | 86.400665 | -22.210888 | 65 | 3 | 23 | 140 | 64.0 | 34.0 | |
| 30 | 13 | APR | 1980 | 1833 | 86.400391 | -22.225399 | 74 | 3 | 32 | 200 | 78.0 | 82.0 | |
| 30 | 13 | APR | 1980 | 1937 | 86.400146 | -22.209087 | 63 | 3 | 21 | 140 | 81.0 | 18.0 | |
| 30 | 13 | APR | 1980 | 2124 | 86.400284 | -22.215691 | 64 | 3 | 31 | 140 | 49.0 | 27.0 | |
| 30 | 13 | APR | 1980 | 2242 | 86.400620 | -22.206188 | 70 | 3 | 28 | 190 | 65.0 | 33.0 | |
| 30 | 13 | APR | 1980 | 2310 | 86.400421 | -22.223228 | 70 | 3 | 35 | 140 | 52.0 | 61.0 | |
| 30 | 13 | APR | 1980 | 2350 | 86.401031 | -22.195484 | 74 | 3 | 31 | 200 | 49.0 | 64.0 | |
| 30 | 14 | APR | 1980 | 136 | 86.400742 | -22.204514 | 67 | 3 | 29 | 200 | 65.0 | 43.0 | |
| 30 | 14 | APR | 1980 | 322 | 86.400528 | -22.209641 | 65 | 3 | 29 | 200 | 61.0 | 28.0 | |
| 30 | 14 | APR | 1980 | 402 | 86.400341 | -22.225739 | 79 | 3 | 29 | 190 | 83.0 | 136.0 | |
| 30 | 14 | APR | 1980 | 430 | 86.400269 | -22.198532 | 79 | 3 | 30 | 140 | 60.0 | 72.0 | |
| 30 | 14 | APR | 1980 | 508 | 86.400330 | -22.216740 | 67 | 3 | 34 | 200 | 67.0 | 40.0 | |
| 30 | 14 | APR | 1980 | 617 | 86.400269 | -22.210686 | 73 | 3 | 35 | 140 | 56.0 | 28.0 | |
| 30 | 14 | APR | 1980 | 654 | 86.400848 | -22.222126 | 74 | 3 | 31 | 200 | 56.0 | 67.0 | |
| 30 | 14 | APR | 1980 | 804 | 86.400375 | -22.207710 | 71 | 3 | 35 | 140 | 54.0 | 18.0 | |
| 30 | 14 | APR | 1980 | 952 | 86.400345 | -22.214104 | 74 | 3 | 29 | 140 | 83.0 | 45.0 | |
| 30 | 14 | APR | 1980 | 1110 | 86.401031 | -22.211929 | 67 | 3 | 22 | 190 | 84.0 | 41.0 | |
| 30 | 14 | APR | 1980 | 1139 | 86.400345 | -22.234680 | 82 | 3 | 30 | 140 | 67.0 | 97.0 | |
| 30 | 14 | APR | 1980 | 1210 | 86.401016 | -22.192612 | 73 | 3 | 28 | 200 | 67.0 | 69.0 | |
| 30 | 14 | APR | 1980 | 1258 | 86.400665 | -22.213486 | 67 | 3 | 33 | 190 | 61.0 | 24.0 | |
| 30 | 14 | APR | 1980 | 1445 | 86.400772 | -22.218311 | 72 | 3 | 34 | 140 | 58.0 | 47.0 | |
| 30 | 14 | APR | 1980 | 1512 | 86.400574 | -22.187820 | 76 | 3 | 29 | 140 | 59.0 | 117.0 | |
| 30 | 14 | APR | 1980 | 1540 | 86.400665 | -22.208767 | 66 | 3 | 33 | 200 | 77.0 | 24.0 | |
| 30 | 14 | APR | 1980 | 1632 | 86.400925 | -22.226986 | 80 | 3 | 29 | 190 | 53.0 | 114.0 | |
| 30 | 14 | APR | 1980 | 1659 | 86.400696 | -22.205235 | 68 | 3 | 30 | 140 | 56.0 | 45.0 | |
| 30 | 14 | APR | 1980 | 1726 | 86.400299 | -22.216427 | 69 | 3 | 29 | 200 | 68.0 | 46.0 | |
| 30 | 14 | APR | 1980 | 1845 | 86.400421 | -22.209747 | 63 | 3 | 35 | 140 | 50.0 | 21.0 | |
| 30 | 14 | APR | 1980 | 1911 | 86.400040 | -22.228359 | 77 | 3 | 32 | 200 | 89.0 | 131.0 | |
| 30 | 14 | APR | 1980 | 1946 | 86.400238 | -22.230309 | 72 | 3 | 34 | 110 | 64.0 | 61.0 | |
| 30 | 14 | APR | 1980 | 2032 | 86.400742 | -22.223362 | 63 | 3 | 36 | 140 | 51.0 | 20.0 | |
| 30 | 14 | APR | 1980 | 2153 | 86.401016 | -22.216213 | 72 | 3 | 32 | 190 | 77.0 | 49.0 | |
| 30 | 14 | APR | 1980 | 2218 | 86.401031 | -22.236622 | 67 | 3 | 30 | 140 | 47.0 | 39.0 | |
| 30 | 14 | APR | 1980 | 2340 | 86.400940 | -22.236858 | 69 | 3 | 29 | 190 | 42.0 | 30.0 | |
| 30 | 15 | APR | 1980 | 4 | 86.401531 | -22.267712 | 75 | 4 | 34 | 140 | 47.0 | 93.0 | |
| 30 | 15 | APR | 1980 | 28 | 86.400803 | -22.233974 | 70 | 3 | 31 | 200 | 82.0 | 75.0 | |
| 30 | 15 | APR | 1980 | 126 | 86.400253 | -22.288967 | 70 | 3 | 36 | 190 | 66.0 | 29.0 | |
| 30 | 15 | APR | 1980 | 214 | 86.404419 | -22.321507 | 65 | 3 | 23 | 200 | 75.0 | 41.0 | |
| 30 | 15 | APR | 1980 | 312 | 86.402252 | -22.421249 | 75 | 3 | 34 | 190 | 87.0 | 91.0 | |
| 30 | 15 | APR | 1980 | 400 | 86.406128 | -22.422298 | 65 | 3 | 24 | 200 | 86.0 | 44.0 | |
| 30 | 15 | APR | 1980 | 525 | 86.407196 | -22.495331 | 75 | 3 | 33 | 140 | 60.0 | 46.0 | |
| 30 | 15 | APR | 1980 | 546 | 86.408005 | -22.508961 | 69 | 3 | 23 | 200 | 81.0 | 46.0 | |
| 30 | 15 | APR | 1980 | 712 | 86.404775 | -22.621082 | 71 | 3 | 32 | 140 | 53.0 | 20.0 | |
| 30 | 15 | APR | 1980 | 834 | 86.408539 | -22.721512 | 75 | 3 | 25 | 190 | 73.0 | 81.0 | |
| 30 | 15 | APR | 1980 | 900 | 86.410461 | -22.744263 | 72 | 3 | 34 | 140 | 59.0 | 28.0 | |
| 30 | 15 | APR | 1980 | 1021 | 86.410343 | -22.862610 | 69 | 3 | 33 | 190 | 52.0 | 32.0 | |

FRAM 2

NAVIGATION - ORIGINAL

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDX |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|-------|
| 30 | 15 | APR | 1980 | 1208 | 86.412170 | -22.979729 | 67 | 3 | 30 | 190 | 56.0 | 25.0 |
| 30 | 15 | APR | 1980 | 1356 | 86.412537 | -23.082081 | 69 | 3 | 33 | 190 | 63.0 | 35.0 |
| 30 | 15 | APR | 1980 | 1543 | 86.413351 | -23.175941 | 70 | 3 | 31 | 190 | 54.0 | 66.0 |
| 30 | 15 | APR | 1980 | 1607 | 86.411896 | -23.173828 | 71 | 3 | 30 | 140 | 36.0 | 45.0 |
| 30 | 15 | APR | 1980 | 1754 | 86.412521 | -23.273876 | 65 | 3 | 28 | 140 | 56.0 | 34.0 |
| 30 | 15 | APR | 1980 | 2044 | 86.413696 | -23.439281 | 77 | 4 | 27 | 110 | 69.0 | 115.0 |
| 30 | 15 | APR | 1980 | 2104 | 86.413361 | -23.398582 | 75 | 3 | 35 | 190 | 85.0 | 84.0 |
| 30 | 15 | APR | 1980 | 2250 | 86.413132 | -23.477612 | 70 | 3 | 27 | 190 | 72.0 | 29.0 |
| 30 | 15 | APR | 1980 | 2312 | 86.413681 | -23.522644 | 71 | 3 | 28 | 140 | 47.0 | 63.0 |
| 30 | 16 | APR | 1980 | 37 | 86.412979 | -23.604609 | 69 | 3 | 23 | 190 | 84.0 | 30.0 |
| 30 | 16 | APR | 1980 | 224 | 86.413666 | -23.593147 | 72 | 3 | 24 | 190 | 75.0 | 59.0 |
| 30 | 16 | APR | 1980 | 620 | 86.413895 | -23.595039 | 72 | 3 | 17 | 140 | 77.0 | 60.0 |
| 30 | 16 | APR | 1980 | 744 | 86.414505 | -23.592777 | 79 | 3 | 30 | 190 | 47.0 | 92.0 |
| 30 | 16 | APR | 1980 | 932 | 86.414627 | -23.605659 | 71 | 3 | 33 | 190 | 46.0 | 37.0 |
| 30 | 16 | APR | 1980 | 1306 | 86.414642 | -23.606121 | 68 | 3 | 37 | 190 | 57.0 | 25.0 |
| 30 | 16 | APR | 1980 | 1454 | 86.414307 | -23.621212 | 72 | 3 | 35 | 190 | 51.0 | 50.0 |
| 30 | 16 | APR | 1980 | 1511 | 86.414078 | -23.604790 | 66 | 3 | 20 | 200 | 77.0 | 24.0 |
| 30 | 16 | APR | 1980 | 1641 | 86.414764 | -23.629314 | 81 | 3 | 26 | 190 | 66.0 | 135.0 |
| 30 | 16 | APR | 1980 | 1702 | 86.413696 | -23.592175 | 68 | 3 | 29 | 140 | 56.0 | 43.0 |
| 30 | 16 | APR | 1980 | 1848 | 86.414734 | -23.608097 | 63 | 3 | 22 | 140 | 55.0 | 22.0 |
| 30 | 16 | APR | 1980 | 2034 | 86.414368 | -23.629185 | 63 | 3 | 27 | 140 | 75.0 | 29.0 |
| 30 | 16 | APR | 1980 | 2220 | 86.414642 | -23.639885 | 68 | 3 | 23 | 140 | 75.0 | 71.0 |
| 30 | 16 | APR | 1980 | 2348 | 86.413208 | -23.629086 | 69 | 3 | 29 | 190 | 77.0 | 26.0 |
| 30 | 17 | APR | 1980 | 7 | 86.413696 | -23.653820 | 76 | 3 | 32 | 140 | 51.0 | 118.0 |
| 30 | 17 | APR | 1980 | 340 | 86.410614 | -23.607063 | 83 | 3 | 30 | 140 | 72.0 | 122.0 |
| 30 | 17 | APR | 1980 | 528 | 86.411118 | -23.635326 | 75 | 3 | 27 | 140 | 84.0 | 51.0 |
| 30 | 17 | APR | 1980 | 715 | 86.410233 | -23.648808 | 71 | 3 | 27 | 140 | 82.0 | 33.0 |
| 30 | 17 | APR | 1980 | 902 | 86.409607 | -23.648144 | 73 | 3 | 25 | 140 | 65.0 | 39.0 |
| 30 | 17 | APR | 1980 | 1049 | 86.407394 | -23.668873 | 79 | 3 | 27 | 140 | 77.0 | 77.0 |
| 30 | 17 | APR | 1980 | 1610 | 86.401581 | -23.599850 | 71 | 3 | 31 | 140 | 52.0 | 59.0 |
| 30 | 17 | APR | 1980 | 1756 | 86.400421 | -23.592316 | 65 | 3 | 33 | 140 | 52.0 | 28.0 |
| 30 | 17 | APR | 1980 | 1942 | 86.398056 | -23.570576 | 62 | 3 | 31 | 140 | 47.0 | 18.0 |
| 30 | 17 | APR | 1980 | 2128 | 86.395137 | -23.540146 | 65 | 3 | 24 | 140 | 49.0 | 31.0 |
| 30 | 17 | APR | 1980 | 2315 | 86.391678 | -23.509254 | 72 | 3 | 22 | 140 | 58.0 | 83.0 |
| 30 | 18 | APR | 1980 | 435 | 86.371124 | -23.709824 | 77 | 3 | 31 | 140 | 58.0 | 59.0 |
| 30 | 18 | APR | 1980 | 622 | 86.361618 | -23.767792 | 72 | 3 | 31 | 140 | 78.0 | 35.0 |
| 30 | 18 | APR | 1980 | 753 | 86.353333 | -23.880466 | 78 | 3 | 31 | 190 | 53.0 | 89.0 |
| 30 | 18 | APR | 1980 | 810 | 86.349945 | -23.842545 | 71 | 3 | 32 | 140 | 56.0 | 18.0 |
| 30 | 18 | APR | 1980 | 940 | 86.341492 | -23.934025 | 70 | 3 | 34 | 190 | 57.0 | 38.0 |
| 30 | 18 | APR | 1980 | 957 | 86.336563 | -23.939377 | 75 | 3 | 35 | 140 | 62.0 | 44.0 |
| 30 | 18 | APR | 1980 | 1128 | 86.328079 | -24.000557 | 66 | 3 | 35 | 190 | 62.0 | 27.0 |
| 30 | 18 | APR | 1980 | 1144 | 86.321198 | -24.118492 | 83 | 4 | 24 | 140 | 83.0 | 132.0 |
| 30 | 18 | APR | 1980 | 1315 | 86.313243 | -24.073154 | 67 | 3 | 33 | 190 | 65.0 | 32.0 |
| 30 | 18 | APR | 1980 | 1704 | 86.283840 | -24.176128 | 66 | 3 | 27 | 140 | 60.0 | 39.0 |
| 30 | 18 | APR | 1980 | 1811 | 86.276900 | -24.227032 | 71 | 4 | 32 | 200 | 78.0 | 72.0 |
| 30 | 18 | APR | 1980 | 1850 | 86.272614 | -24.251320 | 62 | 3 | 24 | 140 | 66.0 | 17.0 |
| 30 | 18 | APR | 1980 | 2037 | 86.261396 | -24.308685 | 63 | 3 | 23 | 140 | 74.0 | 37.0 |
| 30 | 18 | APR | 1980 | 2210 | 86.247070 | -24.334663 | 70 | 4 | 35 | 190 | 78.0 | 42.0 |
| 30 | 18 | APR | 1980 | 2223 | 86.249374 | -24.360653 | 67 | 4 | 22 | 140 | 63.0 | 66.0 |
| 30 | 18 | APR | 1980 | 2328 | 86.243332 | -24.451214 | 74 | 3 | 22 | 200 | 72.0 | 131.0 |
| 30 | 19 | APR | 1980 | 114 | 86.227707 | -24.457399 | 66 | 3 | 34 | 200 | 66.0 | 40.0 |
| 30 | 19 | APR | 1980 | 143 | 86.226364 | -24.458858 | 69 | 4 | 21 | 190 | 86.0 | 48.0 |
| 30 | 19 | APR | 1980 | 300 | 86.219269 | -24.503540 | 63 | 3 | 29 | 200 | 61.0 | 25.0 |
| 30 | 19 | APR | 1980 | 446 | 86.208984 | -24.553009 | 65 | 3 | 30 | 200 | 47.0 | 25.0 |
| 30 | 19 | APR | 1980 | 632 | 86.199310 | -24.610352 | 72 | 4 | 27 | 200 | 67.0 | 63.0 |
| 30 | 19 | APR | 1980 | 703 | 86.198502 | -24.657721 | 82 | 4 | 31 | 190 | 48.0 | 123.0 |
| 30 | 19 | APR | 1980 | 718 | 86.197342 | -24.616589 | 70 | 4 | 27 | 140 | 61.0 | 19.0 |
| 30 | 19 | APR | 1980 | 850 | 86.190048 | -24.667023 | 72 | 3 | 78 | 190 | 48.0 | 56.0 |
| 30 | 19 | APR | 1980 | 905 | 86.187149 | -24.657463 | 72 | 4 | 22 | 140 | 77.0 | 26.0 |
| 30 | 19 | APR | 1980 | 1038 | 86.181503 | -24.690533 | 67 | 3 | 26 | 190 | 73.0 | 52.0 |
| 30 | 19 | APR | 1980 | 1052 | 86.173986 | -24.715664 | 78 | 4 | 24 | 140 | 72.0 | 66.0 |
| 30 | 19 | APR | 1980 | 1148 | 86.173874 | -24.671272 | 72 | 4 | 29 | 200 | 60.0 | 81.0 |
| 30 | 19 | APR | 1980 | 1226 | 86.173065 | -24.723022 | 66 | 3 | 35 | 190 | 62.0 | 24.0 |
| 30 | 19 | APR | 1980 | 1334 | 86.167236 | -24.732956 | 65 | 4 | 33 | 200 | 60.0 | 29.0 |
| 30 | 19 | APR | 1980 | 1413 | 86.165580 | -24.773827 | 69 | 4 | 34 | 190 | 62.0 | 44.0 |
| 30 | 19 | APR | 1980 | 1518 | 86.161270 | -24.775528 | 64 | 4 | 27 | 200 | 65.0 | 21.0 |
| 30 | 19 | APR | 1980 | 1704 | 86.156647 | -24.811722 | 65 | 4 | 30 | 200 | 64.0 | 37.0 |
| 30 | 19 | APR | 1980 | 1849 | 86.151976 | -24.833103 | 74 | 4 | 22 | 200 | 81.0 | 108.0 |

FRAM 2

NAVIGATION - ORIGINAL

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDY | STDY |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|-------|------|
| 30 | 19 | APR | 1980 | 2121 | 86.144440 | -24.843090 | 71 | 4 | 27 | 190 | 90.0 | 64.0 | |
| 30 | 20 | APR | 1980 | 6 | 86.139150 | -24.896343 | 70 | 4 | 31 | 200 | 48.0 | 43.0 | |
| 30 | 20 | APR | 1980 | 152 | 86.134644 | -24.897793 | 63 | 4 | 30 | 200 | 44.0 | 22.0 | |
| 30 | 20 | APR | 1980 | 240 | 86.133072 | -24.900146 | 72 | 4 | 29 | 190 | 89.0 | 80.0 | |
| 30 | 20 | APR | 1980 | 338 | 86.130173 | -24.900627 | 63 | 4 | 32 | 200 | 65.0 | 24.0 | |
| 30 | 20 | APR | 1980 | 710 | 86.124969 | -24.923019 | 75 | 4 | 30 | 200 | 48.0 | 70.0 | |
| 30 | 20 | APR | 1980 | 1323 | 86.119522 | -24.871510 | 67 | 4 | 31 | 190 | 64.0 | 30.0 | |
| 30 | 20 | APR | 1980 | 1411 | 86.119171 | -24.849266 | 64 | 3 | 26 | 200 | 61.0 | 23.0 | |
| 30 | 20 | APR | 1980 | 1556 | 86.118973 | -24.853607 | 64 | 4 | 27 | 200 | 60.0 | 19.0 | |
| 30 | 20 | APR | 1980 | 1741 | 86.118973 | -24.846935 | 69 | 4 | 28 | 200 | 63.0 | 52.0 | |
| 30 | 20 | APR | 1980 | 2258 | 86.118011 | -24.821983 | 76 | 4 | 28 | 200 | 47.0 | 75.0 | |
| 30 | 21 | APR | 1980 | 4 | 86.117561 | -24.820023 | 66 | 4 | 27 | 190 | 88.0 | 28.0 | |
| 30 | 21 | APR | 1980 | 44 | 86.117111 | -24.816063 | 66 | 3 | 29 | 200 | 43.0 | 30.0 | |
| 30 | 21 | APR | 1980 | 230 | 86.116028 | -24.801323 | 62 | 3 | 28 | 200 | 49.0 | 22.0 | |
| 30 | 21 | APR | 1980 | 748 | 86.114273 | -24.781158 | 79 | 4 | 26 | 200 | 57.0 | 108.0 | |
| 30 | 21 | APR | 1980 | 859 | 86.113968 | -24.763058 | 71 | 3 | 27 | 190 | 49.0 | 53.0 | |
| 30 | 21 | APR | 1980 | 1046 | 86.113358 | -24.763786 | 65 | 3 | 28 | 190 | 54.0 | 29.0 | |
| 30 | 21 | APR | 1980 | 1234 | 86.111115 | -24.758381 | 65 | 4 | 32 | 190 | 86.0 | 38.0 | |
| 30 | 21 | APR | 1980 | 1304 | 86.110809 | -24.747982 | 66 | 4 | 33 | 200 | 61.0 | 35.0 | |
| 30 | 21 | APR | 1980 | 1421 | 86.109085 | -24.769276 | 70 | 4 | 31 | 190 | 56.0 | 47.0 | |
| 30 | 21 | APR | 1980 | 1449 | 86.108612 | -24.761971 | 63 | 4 | 31 | 200 | 62.0 | 20.0 | |
| 30 | 21 | APR | 1980 | 1608 | 86.105881 | -24.797169 | 78 | 4 | 28 | 190 | 54.0 | 90.0 | |
| 30 | 21 | APR | 1980 | 1634 | 86.105442 | -24.770222 | 65 | 4 | 32 | 200 | 69.0 | 33.0 | |
| 30 | 21 | APR | 1980 | 1819 | 86.103516 | -24.779282 | 72 | 4 | 33 | 200 | 58.0 | 60.0 | |
| 30 | 21 | APR | 1980 | 2256 | 86.097656 | -24.797398 | 63 | 4 | 28 | 130 | 47.0 | 17.0 | |
| 30 | 21 | APR | 1980 | 2336 | 86.097168 | -24.798473 | 71 | 4 | 31 | 200 | 48.0 | 51.0 | |
| 30 | 22 | APR | 1980 | 102 | 86.094208 | -24.806271 | 68 | 4 | 33 | 190 | 86.0 | 37.0 | |
| 30 | 22 | APR | 1980 | 122 | 86.094254 | -24.807068 | 64 | 4 | 31 | 200 | 57.0 | 31.0 | |
| 30 | 22 | APR | 1980 | 308 | 86.090790 | -24.812637 | 62 | 4 | 33 | 200 | 50.0 | 19.0 | |
| 30 | 22 | APR | 1980 | 454 | 86.087296 | -24.824417 | 65 | 4 | 32 | 200 | 48.0 | 28.0 | |
| 30 | 22 | APR | 1980 | 640 | 86.084122 | -24.840130 | 73 | 4 | 27 | 200 | 58.0 | 63.0 | |
| 30 | 22 | APR | 1980 | 751 | 86.082581 | -24.829876 | 73 | 4 | 22 | 130 | 54.0 | 41.0 | |
| 30 | 22 | APR | 1980 | 1145 | 86.073715 | -24.848267 | 64 | 4 | 28 | 190 | 66.0 | 31.0 | |
| 30 | 22 | APR | 1980 | 1332 | 86.068695 | -24.863014 | 67 | 4 | 30 | 190 | 53.0 | 29.0 | |
| 30 | 22 | APR | 1980 | 1520 | 86.063660 | -24.871887 | 74 | 4 | 33 | 190 | 65.0 | 76.0 | |
| 30 | 22 | APR | 1980 | 2228 | 86.046997 | -24.850758 | 78 | 4 | 25 | 200 | 55.0 | 96.0 | |
| 30 | 23 | APR | 1980 | 140 | 86.037277 | -24.802498 | 70 | 4 | 32 | 130 | 54.0 | 52.0 | |
| 30 | 23 | APR | 1980 | 849 | 86.016891 | -24.791023 | 68 | 4 | 22 | 130 | 54.0 | 33.0 | |
| 30 | 23 | APR | 1980 | 1745 | 85.989624 | -24.771381 | 78 | 5 | 25 | 130 | 59.0 | 116.0 | |
| 30 | 23 | APR | 1980 | 1950 | 85.984894 | -24.848499 | 60 | 4 | 28 | 140 | 51.0 | 21.0 | |
| 30 | 24 | APR | 1980 | 610 | 85.961090 | -24.923878 | 70 | 4 | 20 | 200 | 49.0 | 47.0 | |
| 30 | 24 | APR | 1980 | 1127 | 85.950989 | -24.900276 | 72 | 4 | 30 | 200 | 48.0 | 52.0 | |
| 30 | 24 | APR | 1980 | 1312 | 85.947311 | -24.918221 | 64 | 4 | 32 | 200 | 57.0 | 28.0 | |
| 30 | 24 | APR | 1980 | 1457 | 85.943451 | -24.920929 | 62 | 4 | 32 | 200 | 62.0 | 20.0 | |
| 30 | 24 | APR | 1980 | 1526 | 85.941277 | -24.897484 | 71 | 4 | 23 | 140 | 47.0 | 57.0 | |
| 30 | 24 | APR | 1980 | 1642 | 85.939235 | -24.918747 | 65 | 4 | 28 | 200 | 68.0 | 37.0 | |
| 30 | 24 | APR | 1980 | 1712 | 85.937729 | -24.912186 | 63 | 4 | 27 | 140 | 52.0 | 29.0 | |
| 30 | 24 | APR | 1980 | 1827 | 85.935604 | -24.908245 | 73 | 4 | 32 | 200 | 70.0 | 81.0 | |
| 30 | 24 | APR | 1980 | 1853 | 85.933635 | -24.909065 | 60 | 4 | 28 | 140 | 57.0 | 23.0 | |
| 30 | 24 | APR | 1980 | 2044 | 85.930573 | -24.911419 | 62 | 4 | 14 | 140 | 81.0 | 48.0 | |
| 30 | 24 | APR | 1980 | 2344 | 85.923462 | -24.906998 | 69 | 4 | 29 | 200 | 45.0 | 42.0 | |
| 30 | 25 | APR | 1980 | 130 | 85.919342 | -24.897400 | 62 | 4 | 30 | 200 | 48.0 | 23.0 | |
| 30 | 25 | APR | 1980 | 316 | 85.914538 | -24.897587 | 61 | 4 | 29 | 200 | 46.0 | 18.0 | |
| 30 | 25 | APR | 1980 | 502 | 85.910172 | -24.901123 | 55 | 4 | 23 | 200 | 71.0 | 37.0 | |
| 30 | 25 | APR | 1980 | 648 | 85.904724 | -24.910843 | 74 | 4 | 26 | 200 | 36.0 | 52.0 | |
| 30 | 25 | APR | 1980 | 1019 | 85.893082 | -24.823227 | 78 | 5 | 26 | 200 | 79.0 | 125.0 | |
| 30 | 25 | APR | 1980 | 1100 | 85.884554 | -24.927849 | 79 | 5 | 24 | 140 | 68.0 | 76.0 | |
| 30 | 25 | APR | 1980 | 1204 | 85.887258 | -24.846214 | 68 | 4 | 30 | 200 | 64.0 | 45.0 | |
| 30 | 25 | APR | 1980 | 1349 | 85.880173 | -24.835281 | 62 | 4 | 31 | 200 | 53.0 | 20.0 | |
| 30 | 25 | APR | 1980 | 1534 | 85.873322 | -24.812008 | 62 | 4 | 32 | 200 | 55.0 | 20.0 | |
| 30 | 25 | APR | 1980 | 1719 | 85.865677 | -24.778809 | 67 | 4 | 28 | 200 | 60.0 | 42.0 | |
| 30 | 25 | APR | 1980 | 1904 | 85.857727 | -24.728142 | 77 | 5 | 30 | 200 | 67.0 | 113.0 | |
| 30 | 25 | APR | 1980 | 2236 | 85.840973 | -24.718651 | 75 | 4 | 26 | 200 | 42.0 | 62.0 | |
| 30 | 26 | APR | 1980 | 22 | 85.833801 | -24.669933 | 65 | 4 | 28 | 200 | 47.0 | 33.0 | |
| 30 | 26 | APR | 1980 | 105 | 85.830536 | -24.652916 | 72 | 4 | 20 | 110 | 83.0 | 88.0 | |
| 30 | 26 | APR | 1980 | 208 | 85.825577 | -24.630760 | 60 | 4 | 23 | 200 | 42.0 | 20.0 | |
| 30 | 26 | APR | 1980 | 354 | 85.817627 | -24.603184 | 61 | 4 | 26 | 200 | 44.0 | 18.0 | |
| 30 | 26 | APR | 1980 | 440 | 85.814331 | -24.589138 | 64 | 4 | 21 | 110 | 77.0 | 17.0 | |

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDY | STDY |
|----|----|-----|------|------|-----------|-------------|----|---|----|-----|------|-------|------|
| 30 | 26 | APR | 1980 | 540 | 85.810806 | -24.587158 | 67 | 4 | 27 | 200 | 33.0 | 25.0 | |
| 30 | 26 | APR | 1980 | 628 | 85.807724 | -24.576530 | 68 | 4 | 22 | 110 | 53.0 | 24.0 | |
| 30 | 26 | APR | 1980 | 726 | 85.804031 | -24.591995 | 79 | 5 | 22 | 200 | 57.0 | 94.0 | |
| 30 | 26 | APR | 1980 | 815 | 85.802567 | -24.546093 | 77 | 5 | 21 | 110 | 72.0 | 90.0 | |
| 30 | 26 | APR | 1980 | 1056 | 85.793961 | -24.483604 | 72 | 4 | 31 | 200 | 59.0 | 71.0 | |
| 30 | 26 | APR | 1980 | 1149 | 85.791260 | -24.430588 | 77 | 5 | 22 | 110 | 76.0 | 122.0 | 1 |
| 30 | 26 | APR | 1980 | 1242 | 85.789581 | -24.445057 | 64 | 4 | 28 | 200 | 38.0 | 22.0 | |
| 30 | 26 | APR | 1980 | 1336 | 85.787628 | -24.422512 | 68 | 4 | 23 | 110 | 71.0 | 40.0 | |
| 30 | 26 | APR | 1980 | 1427 | 85.786163 | -24.406994 | 61 | 4 | 22 | 200 | 56.0 | 19.0 | |
| 30 | 26 | APR | 1980 | 1522 | 85.784042 | -24.390221 | 63 | 4 | 25 | 110 | 66.0 | 17.0 | |
| 30 | 26 | APR | 1980 | 1612 | 85.782150 | -24.373051 | 62 | 4 | 30 | 200 | 59.0 | 27.0 | |
| 30 | 26 | APR | 1980 | 1709 | 85.779526 | -24.363293 | 63 | 4 | 25 | 110 | 63.0 | 26.0 | |
| 30 | 26 | APR | 1980 | 1757 | 85.777710 | -24.352016 | 70 | 4 | 31 | 200 | 63.0 | 58.0 | |
| 30 | 26 | APR | 1980 | 1856 | 85.777206 | -24.325111 | 69 | 4 | 23 | 110 | 82.0 | 70.0 | |
| 30 | 26 | APR | 1980 | 1942 | 85.774597 | -24.336609 | 81 | 7 | 24 | 200 | 59.0 | 128.0 | 1 |
| 30 | 26 | APR | 1980 | 2229 | 85.771667 | -24.268227 | 87 | 8 | 25 | 110 | 41.0 | 42.0 | |
| 30 | 27 | APR | 1980 | 100 | 85.769470 | -24.256096 | 62 | 4 | 29 | 200 | 53.0 | 29.0 | |
| 30 | 27 | APR | 1980 | 204 | 85.769531 | -24.246319 | 67 | 4 | 22 | 110 | 41.0 | 27.0 | |
| 30 | 27 | APR | 1980 | 246 | 85.768539 | -24.243713 | 59 | 4 | 24 | 200 | 55.0 | 23.0 | |
| 30 | 27 | APR | 1980 | 351 | 85.768372 | -24.236427 | 64 | 4 | 24 | 110 | 46.0 | 18.0 | |
| 30 | 27 | APR | 1980 | 432 | 85.767975 | -24.239456 | 62 | 4 | 19 | 200 | 71.0 | 29.0 | |
| 30 | 27 | APR | 1980 | 539 | 85.767426 | -24.230198 | 65 | 4 | 21 | 110 | 50.0 | 23.0 | |
| 30 | 27 | APR | 1980 | 618 | 85.767670 | -24.229355 | 71 | 4 | 32 | 200 | 44.0 | 50.0 | |
| 30 | 27 | APR | 1980 | 726 | 85.767303 | -24.224472 | 73 | 4 | 26 | 110 | 45.0 | 45.0 | |
| 30 | 27 | APR | 1980 | 1135 | 85.767365 | -24.193863 | 68 | 4 | 28 | 200 | 63.0 | 49.0 | |
| 30 | 27 | APR | 1980 | 1320 | 85.767593 | -24.201916 | 61 | 4 | 31 | 200 | 51.0 | 21.0 | |
| 30 | 27 | APR | 1980 | 1434 | 85.767258 | -24.197483 | 65 | 4 | 26 | 110 | 70.0 | 26.0 | |
| 30 | 27 | APR | 1980 | 1621 | 85.767334 | -24.210339 | 63 | 4 | 25 | 110 | 56.0 | 20.0 | |
| 30 | 27 | APR | 1980 | 1650 | 85.767776 | -24.222336 | 64 | 4 | 18 | 200 | 56.0 | 40.0 | |
| 30 | 27 | APR | 1980 | 1635 | 85.768021 | -24.229698 | 74 | 5 | 20 | 200 | 64.0 | 99.0 | |
| 30 | 28 | APR | 1980 | 303 | 85.768875 | -24.245770 | 64 | 4 | 28 | 110 | 41.0 | 20.0 | |
| 30 | 28 | APR | 1980 | 638 | 85.769333 | -24.255215 | 69 | 4 | 30 | 110 | 42.0 | 30.0 | |
| 30 | 28 | APR | 1980 | 825 | 85.769394 | -24.265137 | 79 | 4 | 35 | 110 | 40.0 | 67.0 | |
| 30 | 28 | APR | 1980 | 836 | 85.770630 | -24.246761 | 68 | 6 | 13 | 190 | 85.0 | 70.0 | |
| 30 | 28 | APR | 1980 | 1159 | 85.770676 | -24.233696 | 76 | 5 | 31 | 110 | 45.0 | 67.0 | |
| 30 | 28 | APR | 1980 | 1212 | 85.770035 | -24.238453 | 65 | 4 | 19 | 200 | 65.0 | 40.0 | |
| 30 | 28 | APR | 1980 | 1545 | 85.771362 | -24.240780 | 77 | 5 | 23 | 190 | 88.0 | 123.0 | 1 |
| 30 | 28 | APR | 1980 | 1719 | 85.772644 | -24.254265 | 64 | 4 | 34 | 110 | 54.0 | 21.0 | |
| 30 | 28 | APR | 1980 | 2106 | 85.783371 | -24.287971 | 67 | 4 | 31 | 190 | 75.0 | 42.0 | |
| 30 | 28 | APR | 1980 | 2236 | 85.786743 | -24.334877 | 70 | 4 | 30 | 140 | 55.0 | 68.0 | |
| 30 | 29 | APR | 1980 | 39 | 85.791809 | -24.351597 | 65 | 4 | 25 | 190 | 83.0 | 35.0 | |
| 30 | 29 | APR | 1980 | 731 | 85.816956 | -24.430309 | 68 | 4 | 23 | 140 | 79.0 | 28.0 | |
| 30 | 29 | APR | 1980 | 1121 | 85.826233 | -24.458836 | 62 | 4 | 30 | 190 | 59.0 | 22.0 | |
| 30 | 29 | APR | 1980 | 1250 | 85.829895 | -24.465088 | 63 | 4 | 16 | 200 | 66.0 | 33.0 | |
| 30 | 29 | APR | 1980 | 1308 | 85.831314 | -24.471619 | 65 | 4 | 29 | 190 | 65.0 | 32.0 | |
| 30 | 29 | APR | 1980 | 1456 | 85.835842 | -24.483456 | 73 | 4 | 31 | 190 | 62.0 | 68.0 | |
| 30 | 29 | APR | 1980 | 1625 | 85.838898 | -24.498409 | 64 | 4 | 28 | 140 | 45.0 | 33.0 | |
| 30 | 29 | APR | 1980 | 2144 | 85.850921 | -24.553661 | 66 | 4 | 21 | 140 | 43.0 | 34.0 | |
| 30 | 29 | APR | 1980 | 2203 | 85.851044 | -24.540314 | 65 | 4 | 27 | 190 | 81.0 | 33.0 | |
| 30 | 30 | APR | 1980 | 136 | 85.857407 | -24.6003725 | 69 | 4 | 28 | 190 | 90.0 | 53.0 | |
| 30 | 30 | APR | 1980 | 451 | 85.865766 | -24.617401 | 71 | 4 | 20 | 140 | 75.0 | 37.0 | |
| 30 | 30 | APR | 1980 | 657 | 85.869263 | -24.639847 | 77 | 4 | 17 | 190 | 69.0 | 133.0 | 1 |
| 30 | 30 | APR | 1980 | 844 | 85.872009 | -24.680595 | 68 | 4 | 35 | 190 | 52.0 | 36.0 | |
| 30 | 30 | APR | 1980 | 1032 | 85.875275 | -24.713837 | 63 | 4 | 26 | 190 | 83.0 | 30.0 | |
| 30 | 30 | APR | 1980 | 1159 | 85.877975 | -24.732903 | 69 | 4 | 20 | 130 | 45.0 | 26.0 | |
| 30 | 30 | APR | 1980 | 1219 | 85.878250 | -24.739990 | 63 | 4 | 33 | 190 | 58.0 | 24.0 | |
| 30 | 30 | APR | 1980 | 1406 | 85.880264 | -24.769989 | 69 | 4 | 31 | 190 | 60.0 | 47.0 | |
| 30 | 30 | APR | 1980 | 1533 | 85.881073 | -24.781601 | 67 | 4 | 19 | 140 | 79.0 | 58.0 | |
| 30 | 30 | APR | 1980 | 1554 | 85.882545 | -24.808041 | 79 | 4 | 34 | 190 | 56.0 | 123.0 | 1 |
| 30 | 30 | APR | 1980 | 1658 | 85.882538 | -24.839245 | 66 | 4 | 22 | 200 | 59.0 | 43.0 | |
| 30 | 30 | APR | 1980 | 1719 | 85.883484 | -24.835419 | 61 | 4 | 19 | 140 | 61.0 | 35.0 | |
| 30 | 30 | APR | 1980 | 1843 | 85.884827 | -24.905361 | 76 | 5 | 28 | 200 | 56.0 | 93.0 | |
| 30 | 30 | APR | 1980 | 1906 | 85.885223 | -24.882156 | 60 | 4 | 26 | 140 | 54.0 | 21.0 | |
| 30 | 30 | APR | 1980 | 2114 | 85.888062 | -24.929890 | 67 | 4 | 28 | 190 | 73.0 | 37.0 | |
| 30 | 30 | APR | 1980 | 2214 | 85.889801 | -24.940411 | 75 | 4 | 26 | 200 | 38.0 | 65.0 | |
| 30 | 1 | MAY | 1980 | 0 | 85.891876 | -24.949016 | 65 | 4 | 23 | 200 | 34.0 | 29.0 | |
| 30 | 1 | MAY | 1980 | 47 | 85.892197 | -25.019970 | 66 | 4 | 25 | 190 | 87.0 | 41.0 | |
| 30 | 1 | MAY | 1980 | 146 | 85.895355 | -25.032555 | 60 | 4 | 24 | 200 | 34.0 | 16.0 | |

FRAM 2

NAVIGATION - ORIGINAL

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDZ |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|-------|
| 30 | 1 | MAY | 1980 | 332 | 85.898483 | -25.066265 | 61 | 4 | 29 | 200 | 43.0 | 19.0 |
| 30 | 1 | MAY | 1980 | 518 | 85.900574 | -25.097881 | 67 | 4 | 27 | 200 | 33.0 | 27.0 |
| 30 | 1 | MAY | 1980 | 704 | 85.902130 | -25.122803 | 78 | 4 | 29 | 200 | 26.0 | 53.0 |
| 30 | 1 | MAY | 1980 | 922 | 85.903732 | -25.125755 | 66 | 4 | 18 | 130 | 69.0 | 26.0 |
| 30 | 1 | MAY | 1980 | 942 | 85.903290 | -25.128113 | 64 | 4 | 27 | 190 | 61.0 | 35.0 |
| 30 | 1 | MAY | 1980 | 1035 | 85.903854 | -25.119244 | 73 | 4 | 26 | 200 | 54.0 | 78.0 |
| 30 | 1 | MAY | 1980 | 1220 | 85.903885 | -25.125130 | 64 | 4 | 31 | 200 | 63.0 | 36.0 |
| 30 | 1 | MAY | 1980 | 1317 | 85.903931 | -25.137310 | 66 | 4 | 31 | 190 | 53.0 | 33.0 |
| 30 | 1 | MAY | 1980 | 1405 | 85.903625 | -25.125034 | 61 | 4 | 23 | 200 | 48.0 | 16.0 |
| 30 | 1 | MAY | 1980 | 1441 | 85.902512 | -25.109104 | 72 | 4 | 30 | 140 | 56.0 | 71.0 |
| 30 | 1 | MAY | 1980 | 1504 | 85.902725 | -25.140793 | 74 | 4 | 32 | 190 | 57.0 | 75.0 |
| 30 | 1 | MAY | 1980 | 1520 | 85.902344 | -25.123104 | 62 | 4 | 30 | 200 | 45.0 | 20.0 |
| 30 | 1 | MAY | 1980 | 1628 | 85.901398 | -25.115551 | 64 | 4 | 24 | 140 | 53.0 | 32.0 |
| 30 | 1 | MAY | 1980 | 1736 | 85.900467 | -25.110062 | 69 | 4 | 29 | 200 | 62.0 | 56.0 |
| 30 | 1 | MAY | 1980 | 1814 | 85.898849 | -25.106712 | 60 | 4 | 23 | 140 | 65.0 | 33.0 |
| 30 | 1 | MAY | 1980 | 2000 | 85.895355 | -25.091576 | 61 | 4 | 27 | 140 | 54.0 | 21.0 |
| 30 | 1 | MAY | 1980 | 2212 | 85.889633 | -25.070244 | 65 | 4 | 27 | 190 | 69.0 | 24.0 |
| 30 | 1 | MAY | 1980 | 2252 | 85.888977 | -25.076778 | 70 | 4 | 29 | 200 | 48.0 | 50.0 |
| 30 | 1 | MAY | 1980 | 2358 | 85.885834 | -25.080994 | 65 | 4 | 26 | 190 | 72.0 | 29.0 |
| 30 | 2 | MAY | 1980 | 38 | 85.885590 | -25.082321 | 62 | 4 | 29 | 200 | 41.0 | 22.0 |
| 30 | 2 | MAY | 1980 | 224 | 85.882767 | -25.087254 | 60 | 4 | 30 | 200 | 39.0 | 15.0 |
| 30 | 2 | MAY | 1980 | 306 | 85.882401 | -25.092316 | 79 | 5 | 18 | 140 | 88.0 | 130.0 |
| 30 | 2 | MAY | 1980 | 410 | 85.879684 | -25.097542 | 62 | 4 | 31 | 200 | 47.0 | 25.0 |
| 30 | 2 | MAY | 1980 | 454 | 85.878677 | -25.096096 | 71 | 4 | 24 | 140 | 69.0 | 49.0 |
| 30 | 2 | MAY | 1980 | 556 | 85.875519 | -25.102184 | 71 | 4 | 30 | 200 | 31.0 | 35.0 |
| 30 | 2 | MAY | 1980 | 641 | 85.873459 | -25.070049 | 68 | 4 | 22 | 140 | 72.0 | 23.0 |
| 30 | 2 | MAY | 1980 | 828 | 85.867142 | -25.032784 | 70 | 4 | 36 | 140 | 52.0 | 27.0 |
| 30 | 2 | MAY | 1980 | 1016 | 85.860901 | -25.003113 | 78 | 4 | 22 | 140 | 71.0 | 72.0 |
| 30 | 2 | MAY | 1980 | 1040 | 85.860321 | -24.942459 | 62 | 4 | 24 | 190 | 67.0 | 26.0 |
| 30 | 2 | MAY | 1980 | 1113 | 85.859100 | -24.913364 | 69 | 4 | 25 | 200 | 46.0 | 40.0 |
| 30 | 2 | MAY | 1980 | 1258 | 85.855209 | -24.848213 | 61 | 4 | 29 | 200 | 40.0 | 17.0 |
| 30 | 2 | MAY | 1980 | 1349 | 85.852188 | -24.762959 | 77 | 5 | 26 | 140 | 66.0 | 117.0 |
| 30 | 2 | MAY | 1980 | 1415 | 85.850525 | -24.805630 | 70 | 4 | 24 | 190 | 67.0 | 46.0 |
| 30 | 2 | MAY | 1980 | 1443 | 85.851700 | -24.765816 | 60 | 4 | 29 | 200 | 47.0 | 15.0 |
| 30 | 2 | MAY | 1980 | 1536 | 85.848541 | -24.713131 | 67 | 4 | 29 | 140 | 37.0 | 32.0 |
| 30 | 2 | MAY | 1980 | 1722 | 85.844101 | -24.635555 | 61 | 4 | 31 | 140 | 42.0 | 17.0 |
| 30 | 2 | MAY | 1980 | 1813 | 85.842331 | -24.587074 | 74 | 5 | 25 | 200 | 72.0 | 101.0 |
| 30 | 2 | MAY | 1980 | 1908 | 85.839447 | -24.551331 | 60 | 4 | 31 | 140 | 45.0 | 17.0 |
| 30 | 2 | MAY | 1980 | 1936 | 85.837006 | -24.523285 | 73 | 4 | 27 | 190 | 71.0 | 71.0 |
| 30 | 2 | MAY | 1980 | 2054 | 85.834167 | -24.466431 | 64 | 4 | 30 | 140 | 57.0 | 41.0 |
| 30 | 2 | MAY | 1980 | 2123 | 85.832439 | -24.449780 | 66 | 4 | 31 | 190 | 64.0 | 29.0 |
| 30 | 2 | MAY | 1980 | 2241 | 85.829773 | -24.380505 | 72 | 4 | 24 | 140 | 42.0 | 63.0 |
| 30 | 2 | MAY | 1980 | 2309 | 85.828278 | -24.371895 | 63 | 4 | 33 | 190 | 68.0 | 20.0 |
| 30 | 2 | MAY | 1980 | 2330 | 85.826538 | -24.359203 | 60 | 4 | 20 | 200 | 52.0 | 50.0 |
| 30 | 3 | MAY | 1980 | 116 | 85.822418 | -24.283657 | 60 | 4 | 31 | 200 | 32.0 | 13.0 |
| 30 | 3 | MAY | 1980 | 302 | 85.818771 | -24.222366 | 60 | 4 | 28 | 200 | 46.0 | 18.0 |
| 30 | 3 | MAY | 1980 | 401 | 85.816711 | -24.166466 | 73 | 4 | 23 | 140 | 82.0 | 75.0 |
| 30 | 3 | MAY | 1980 | 448 | 85.815674 | -24.163128 | 65 | 4 | 19 | 200 | 51.0 | 30.0 |
| 30 | 3 | MAY | 1980 | 548 | 85.812592 | -24.120331 | 68 | 4 | 26 | 140 | 81.0 | 37.0 |
| 30 | 3 | MAY | 1980 | 634 | 85.810837 | -24.122219 | 76 | 4 | 28 | 200 | 37.0 | 59.0 |
| 30 | 3 | MAY | 1980 | 803 | 85.807663 | -24.039513 | 69 | 4 | 26 | 190 | 56.0 | 55.0 |
| 30 | 3 | MAY | 1980 | 923 | 85.802811 | -24.028648 | 75 | 4 | 30 | 140 | 80.0 | 58.0 |
| 30 | 3 | MAY | 1980 | 950 | 85.802689 | -23.981888 | 63 | 4 | 29 | 190 | 66.0 | 32.0 |
| 30 | 3 | MAY | 1980 | 1005 | 85.802277 | -23.953552 | 75 | 5 | 20 | 200 | 65.0 | 80.0 |
| 30 | 3 | MAY | 1980 | 1138 | 85.797455 | -23.930080 | 62 | 4 | 32 | 190 | 59.0 | 23.0 |
| 30 | 3 | MAY | 1980 | 1326 | 85.792221 | -23.887894 | 66 | 4 | 27 | 190 | 62.0 | 36.0 |
| 30 | 3 | MAY | 1980 | 1444 | 85.788581 | -23.828175 | 70 | 4 | 30 | 140 | 60.0 | 65.0 |
| 30 | 3 | MAY | 1980 | 1513 | 85.786804 | -23.866730 | 76 | 4 | 32 | 190 | 55.0 | 85.0 |
| 30 | 3 | MAY | 1980 | 1630 | 85.784036 | -23.796467 | 62 | 4 | 34 | 140 | 46.0 | 25.0 |
| 30 | 3 | MAY | 1980 | 1816 | 85.779953 | -23.766350 | 59 | 4 | 30 | 140 | 55.0 | 19.0 |
| 30 | 3 | MAY | 1980 | 2002 | 85.775757 | -23.720478 | 61 | 4 | 33 | 140 | 49.0 | 24.0 |
| 30 | 3 | MAY | 1980 | 2034 | 85.773544 | -23.706539 | 68 | 4 | 32 | 190 | 66.0 | 43.0 |
| 30 | 3 | MAY | 1980 | 2149 | 85.771896 | -23.669273 | 68 | 4 | 24 | 140 | 48.0 | 48.0 |
| 30 | 3 | MAY | 1980 | 2220 | 85.770554 | -23.667698 | 63 | 4 | 26 | 190 | 79.0 | 32.0 |
| 30 | 3 | MAY | 1980 | 2335 | 85.768692 | -23.608303 | 79 | 5 | 33 | 140 | 38.0 | 125.0 |
| 30 | 4 | MAY | 1980 | 309 | 85.763290 | -23.513618 | 76 | 4 | 34 | 140 | 57.0 | 55.0 |
| 30 | 4 | MAY | 1980 | 456 | 85.760376 | -23.469261 | 69 | 4 | 29 | 140 | 52.0 | 26.0 |
| 30 | 4 | MAY | 1980 | 644 | 85.757675 | -23.434052 | 67 | 4 | 27 | 140 | 59.0 | 19.0 |

FRAM 2

NAVIGATION - ORIGINAL

| SN | DY | MON | YEAR | GMT | LATITUDE | LONGITUDE | EL | I | DP | SAT | STDY | STDY |
|----|----|-----|------|------|-----------|------------|----|---|----|-----|------|------|
| 30 | 4 | MAY | 1980 | 831 | 85.755066 | -23.398399 | 71 | 4 | 30 | 140 | 57.0 | 30.0 |
| 30 | 4 | MAY | 1980 | 1018 | 85.751968 | -23.375206 | 80 | 5 | 33 | 140 | 65.0 | 83.0 |

Kalman Filtering of Position Data

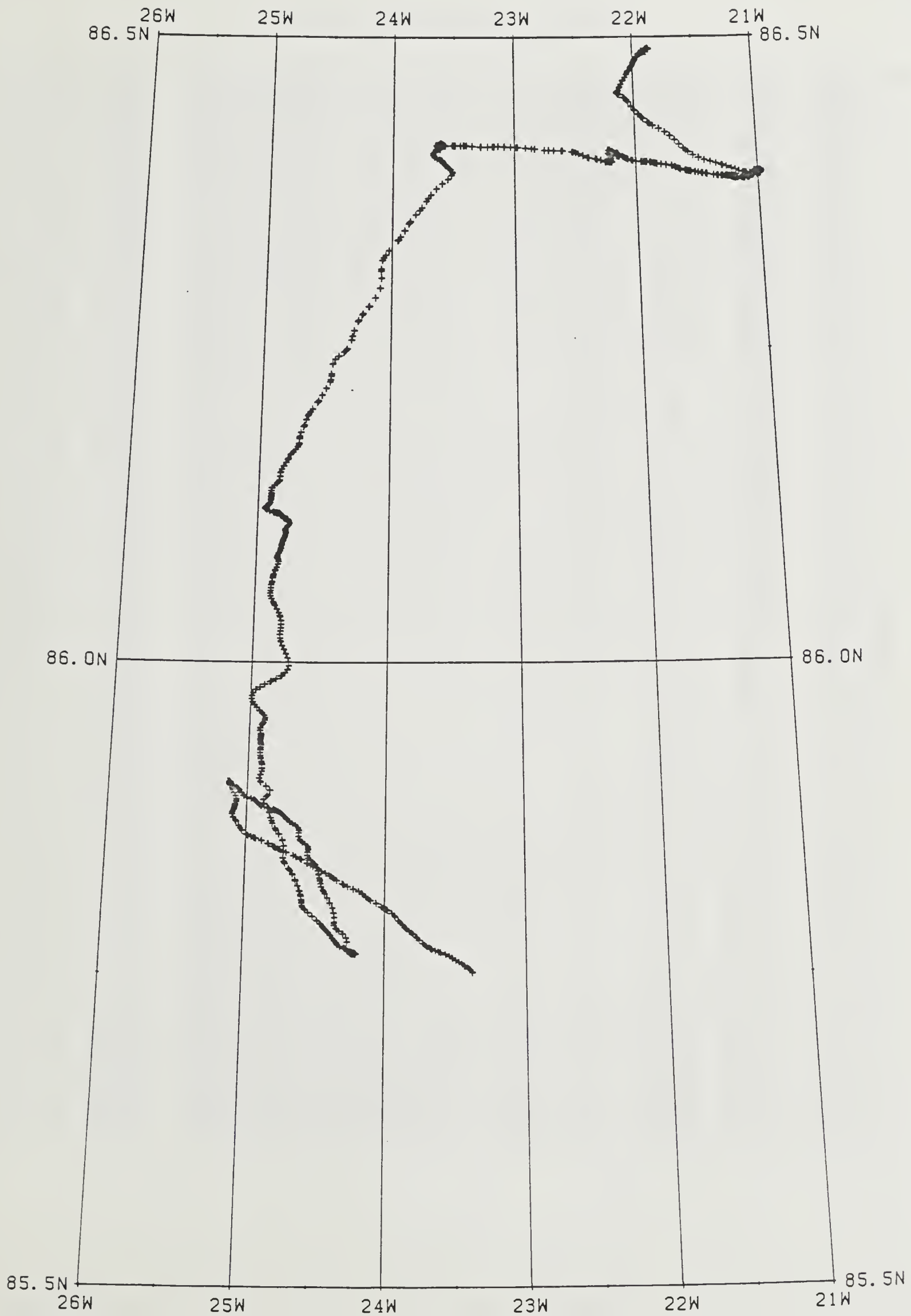
A Kalman filtering technique was used on the FRAM II navigation data set. At FRAM II the density of the fixes ranged from 7 to 29 per day. The main purpose of the filter was to smooth the track and provide fixes at evenly-spaced time intervals of one hour. In addition, ice velocities were computed at the same evenly-spaced intervals. More detail on the Kalman filtering techniques for irregularly-spaced data sets is given in Thorndike and Manley (1980). Removal of oscillations in the ice motion with periods greater than that of the inertial period was estimated to be less than 5%.

SMOOTHED HOURLY POSITIONS AND ICE VELOCITIES OF THE FRAM II DRIFTING STATION

Key to column headings

| | |
|-----------|--|
| DY | Day |
| MON | Month |
| YEAR | Year |
| GMT | Greenwich mean time |
| JULDAY | Relative Julian Day, Day 1 = Jan 01, 1980 |
| LATITUDE | North latitude in decimal degrees |
| LONGITUDE | Longitude in decimal degrees, (negative implies west longitude) |
| N-VEL | North-South component of ice velocity (cm/sec) positive values indicate north velocity negative values indicate south velocity |
| E-VEL | East-West component of ice velocity (cm/sec) positive values indicate east velocity negative values indicate west velocity |

Note that along with the evenly spaced data is the filtered original data with associated ice velocity.



FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|-----------|-----------|------------|--------|--------|
| 1 | APR | 1980 | 1215 | 92.510414 | 86.489861 | -21.863552 | 0.0 | -0.1 |
| 1 | APR | 1980 | 1255 | 92.538200 | 86.489868 | -21.864040 | 0.1 | -0.2 |
| 1 | APR | 1980 | 1300 | 92.541664 | 86.489868 | -21.864128 | 0.1 | -0.2 |
| 1 | APR | 1980 | 1400 | 92.583336 | 86.489975 | -21.865515 | 0.5 | -0.3 |
| 1 | APR | 1980 | 1500 | 92.625000 | 86.490196 | -21.866909 | 0.8 | -0.3 |
| 1 | APR | 1980 | 1600 | 92.666664 | 86.490448 | -21.868843 | 0.7 | -0.5 |
| 1 | APR | 1980 | 1700 | 92.708336 | 86.490570 | -21.872696 | 0.0 | -1.0 |
| 1 | APR | 1980 | 1800 | 92.750000 | 86.490410 | -21.879305 | -1.0 | -1.5 |
| 1 | APR | 1980 | 1900 | 92.791664 | 86.489952 | -21.887589 | -1.8 | -1.5 |
| 1 | APR | 1980 | 1922 | 92.806946 | 86.489731 | -21.890377 | -2.0 | -1.3 |
| 1 | APR | 1980 | 2000 | 92.833336 | 86.489311 | -21.894093 | -2.0 | -0.8 |
| 1 | APR | 1980 | 2100 | 92.875000 | 86.488754 | -21.895607 | -1.2 | 0.2 |
| 1 | APR | 1980 | 2108 | 92.880554 | 86.488708 | -21.895451 | -1.0 | 0.3 |
| 1 | APR | 1980 | 2125 | 92.892365 | 86.488640 | -21.894918 | -0.5 | 0.4 |
| 1 | APR | 1980 | 2151 | 92.910423 | 86.488617 | -21.893978 | 0.2 | 0.3 |
| 1 | APR | 1980 | 2200 | 92.916664 | 86.488632 | -21.893787 | 0.4 | 0.2 |
| 1 | APR | 1980 | 2254 | 92.954163 | 86.488831 | -21.893911 | 0.6 | 0.0 |
| 1 | APR | 1980 | 2300 | 92.958336 | 86.488846 | -21.893906 | 0.5 | 0.0 |
| 2 | APR | 1980 | 0 | 93.000000 | 86.488823 | -21.892279 | -0.7 | 0.6 |
| 2 | APR | 1980 | 41 | 93.028473 | 86.488809 | -21.890369 | -1.2 | 0.2 |
| 2 | APR | 1980 | 100 | 93.041664 | 86.488480 | -21.890451 | -1.3 | -0.4 |
| 2 | APR | 1980 | 100 | 93.041664 | 86.488480 | -21.890451 | -1.3 | -0.4 |
| 2 | APR | 1980 | 124 | 93.058327 | 86.488297 | -21.892197 | -1.4 | -1.3 |
| 2 | APR | 1980 | 200 | 93.083336 | 86.487991 | -21.898684 | -1.8 | -2.8 |
| 2 | APR | 1980 | 247 | 93.115974 | 86.487488 | -21.912905 | -2.1 | -3.8 |
| 2 | APR | 1980 | 300 | 93.125000 | 86.487343 | -21.917255 | -2.0 | -3.8 |
| 2 | APR | 1980 | 310 | 93.131950 | 86.487236 | -21.920582 | -2.0 | -3.7 |
| 2 | APR | 1980 | 400 | 93.166664 | 86.486771 | -21.935047 | -1.3 | -2.5 |
| 2 | APR | 1980 | 500 | 93.208336 | 86.486389 | -21.943544 | -1.5 | -1.0 |
| 2 | APR | 1980 | 600 | 93.250000 | 86.485497 | -21.950182 | -4.3 | -1.9 |
| 2 | APR | 1980 | 602 | 93.251396 | 86.485451 | -21.950525 | -4.5 | -2.0 |
| 2 | APR | 1980 | 700 | 93.291664 | 86.483551 | -21.965029 | -7.3 | -3.5 |
| 2 | APR | 1980 | 748 | 93.325005 | 86.481522 | -21.980520 | -8.1 | -3.5 |
| 2 | APR | 1980 | 800 | 93.333336 | 86.481003 | -21.984137 | -8.0 | -3.3 |
| 2 | APR | 1980 | 809 | 93.339577 | 86.480606 | -21.986692 | -8.0 | -3.1 |
| 2 | APR | 1980 | 831 | 93.354858 | 86.479652 | -21.992361 | -8.0 | -2.7 |
| 2 | APR | 1980 | 900 | 93.375000 | 86.478386 | -21.998875 | -8.1 | -2.5 |
| 2 | APR | 1980 | 936 | 93.400002 | 86.476768 | -22.007435 | -8.0 | -3.1 |
| 2 | APR | 1980 | 1000 | 93.416664 | 86.475624 | -22.014843 | -9.1 | -3.9 |
| 2 | APR | 1980 | 1018 | 93.429169 | 86.474709 | -22.021484 | -9.6 | -4.5 |
| 2 | APR | 1980 | 1100 | 93.458336 | 86.472481 | -22.038660 | -9.7 | -4.4 |
| 2 | APR | 1980 | 1123 | 93.471304 | 86.471313 | -22.046906 | -9.0 | -3.7 |
| 2 | APR | 1980 | 1200 | 93.500000 | 86.469620 | -22.057116 | -8.0 | -2.7 |
| 2 | APR | 1980 | 1206 | 93.504173 | 86.469360 | -22.058535 | -7.9 | -2.7 |
| 2 | APR | 1980 | 1300 | 93.541664 | 86.467087 | -22.070993 | -7.9 | -2.9 |
| 2 | APR | 1980 | 1353 | 93.578168 | 86.464745 | -22.086763 | -8.5 | -3.7 |
| 2 | APR | 1980 | 1400 | 93.583336 | 86.464417 | -22.089066 | -8.5 | -3.8 |
| 2 | APR | 1980 | 1500 | 93.625000 | 86.461563 | -22.107941 | -9.1 | -3.0 |
| 2 | APR | 1980 | 1541 | 93.653473 | 86.459541 | -22.117002 | -9.1 | -2.2 |
| 2 | APR | 1980 | 1600 | 93.666664 | 86.458618 | -22.120687 | -8.8 | -2.3 |
| 2 | APR | 1980 | 1644 | 93.697227 | 86.456688 | -22.130297 | -7.1 | -2.8 |
| 2 | APR | 1980 | 1700 | 93.708336 | 86.456116 | -22.134251 | -6.1 | -2.8 |
| 2 | APR | 1980 | 1704 | 93.711113 | 86.455986 | -22.135231 | -5.9 | -2.8 |
| 2 | APR | 1980 | 1723 | 93.727776 | 86.455315 | -22.140276 | -4.5 | -1.8 |
| 2 | APR | 1980 | 1800 | 93.750000 | 86.454659 | -22.141582 | -3.3 | 1.0 |
| 2 | APR | 1980 | 1830 | 93.770836 | 86.454109 | -22.135399 | -3.7 | 3.6 |
| 2 | APR | 1980 | 1850 | 93.784721 | 86.453659 | -22.127869 | -4.0 | 5.0 |
| 2 | APR | 1980 | 1900 | 93.791664 | 86.453392 | -22.123232 | -5.2 | 5.6 |
| 2 | APR | 1980 | 2000 | 93.833336 | 86.451050 | -22.086866 | -9.3 | 7.7 |
| 2 | APR | 1980 | 2016 | 93.844444 | 86.450188 | -22.076059 | -10.5 | 7.7 |
| 2 | APR | 1980 | 2037 | 93.854032 | 86.448944 | -22.062193 | -11.5 | 7.3 |
| 2 | APR | 1980 | 2100 | 93.875000 | 86.447487 | -22.048746 | -11.7 | 6.0 |
| 2 | APR | 1980 | 2101 | 93.875694 | 86.447426 | -22.048229 | -11.7 | 5.9 |
| 2 | APR | 1980 | 2200 | 93.916664 | 86.443810 | -22.024237 | -10.9 | 4.3 |
| 2 | APR | 1980 | 2202 | 93.918060 | 86.443687 | -22.023476 | -10.9 | 4.4 |
| 2 | APR | 1980 | 2248 | 93.950005 | 86.441071 | -22.003428 | -10.2 | 5.8 |
| 2 | APR | 1980 | 2300 | 93.958336 | 86.440414 | -21.997126 | -10.0 | 6.3 |
| 2 | APR | 1980 | 2349 | 93.992363 | 86.437775 | -21.968349 | -10.2 | 6.8 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 3 | APR | 1980 | 0 | 94.0000000 | 86.437164 | -21.961967 | -10.4 | 6.6 |
| 3 | APR | 1980 | 35 | 94.0243000 | 86.435188 | -21.942602 | -10.3 | 6.3 |
| 3 | APR | 1980 | 100 | 94.041664 | 86.433823 | -21.928900 | -9.8 | 6.4 |
| 3 | APR | 1980 | 158 | 94.081940 | 86.430992 | -21.894011 | -8.3 | 7.7 |
| 3 | APR | 1980 | 200 | 94.083336 | 86.430901 | -21.892673 | -8.3 | 7.7 |
| 3 | APR | 1980 | 221 | 94.097923 | 86.429985 | -21.878004 | -7.9 | 8.4 |
| 3 | APR | 1980 | 300 | 94.1250000 | 86.428368 | -21.848238 | -7.5 | 9.1 |
| 3 | APR | 1980 | 400 | 94.1600004 | 86.425896 | -21.799698 | -7.9 | 9.3 |
| 3 | APR | 1980 | 500 | 94.208336 | 86.423157 | -21.753122 | -9.0 | 8.5 |
| 3 | APR | 1980 | 600 | 94.2500000 | 86.420044 | -21.711363 | -10.1 | 7.5 |
| 3 | APR | 1980 | 700 | 94.291664 | 86.416641 | -21.674311 | -10.8 | 6.8 |
| 3 | APR | 1980 | 800 | 94.333336 | 86.413139 | -21.639946 | -10.7 | 6.6 |
| 3 | APR | 1980 | 900 | 94.3750000 | 86.409790 | -21.605410 | -9.9 | 6.9 |
| 3 | APR | 1980 | 929 | 94.395142 | 86.408287 | -21.587845 | -9.3 | 7.2 |
| 3 | APR | 1980 | 1000 | 94.416664 | 86.406784 | -21.568174 | -8.6 | 7.5 |
| 3 | APR | 1980 | 1100 | 94.458336 | 86.404213 | -21.527239 | -7.2 | 8.3 |
| 3 | APR | 1980 | 1200 | 94.5000000 | 86.402077 | -21.482655 | -5.9 | 8.9 |
| 3 | APR | 1980 | 1300 | 94.541664 | 86.400322 | -21.435436 | -5.0 | 9.3 |
| 3 | APR | 1980 | 1400 | 94.583336 | 86.398827 | -21.387274 | -4.3 | 9.3 |
| 3 | APR | 1980 | 1500 | 94.6250000 | 86.397461 | -21.340115 | -4.1 | 8.9 |
| 3 | APR | 1980 | 1600 | 94.6666604 | 86.396118 | -21.295704 | -4.2 | 8.3 |
| 3 | APR | 1980 | 1615 | 94.677080 | 86.395782 | -21.285183 | -4.2 | 8.1 |
| 3 | APR | 1980 | 1700 | 94.703336 | 86.394745 | -21.255152 | -4.3 | 7.5 |
| 3 | APR | 1980 | 1800 | 94.7500000 | 86.393364 | -21.218567 | -4.2 | 6.7 |
| 3 | APR | 1980 | 1900 | 94.791664 | 86.392052 | -21.185303 | -3.8 | 6.2 |
| 3 | APR | 1980 | 2000 | 94.833336 | 86.390915 | -21.154301 | -3.1 | 5.9 |
| 3 | APR | 1980 | 2100 | 94.8750000 | 86.390068 | -21.124529 | -2.1 | 5.7 |
| 3 | APR | 1980 | 2134 | 94.898613 | 86.389748 | -21.107935 | -1.5 | 5.7 |
| 3 | APR | 1980 | 2200 | 94.916664 | 86.389572 | -21.095356 | -1.0 | 5.6 |
| 3 | APR | 1980 | 2300 | 94.958336 | 86.389404 | -21.066914 | -0.1 | 5.4 |
| 3 | APR | 1980 | 2346 | 94.990273 | 86.389450 | -21.046190 | 0.4 | 5.1 |
| 4 | APR | 1980 | 0 | 95.0000000 | 86.389488 | -21.040155 | 0.6 | 5.0 |
| 4 | APR | 1980 | 100 | 95.041664 | 86.389732 | -21.016144 | 0.9 | 4.3 |
| 4 | APR | 1980 | 200 | 95.083336 | 86.390068 | -20.996176 | 1.1 | 3.4 |
| 4 | APR | 1980 | 300 | 95.1250000 | 86.390419 | -20.981464 | 1.1 | 2.3 |
| 4 | APR | 1980 | 400 | 95.166664 | 86.390739 | -20.972895 | 0.9 | 1.0 |
| 4 | APR | 1980 | 500 | 95.208336 | 86.390999 | -20.970860 | 0.7 | -0.2 |
| 4 | APR | 1980 | 600 | 95.2500000 | 86.391182 | -20.975151 | 0.4 | -1.4 |
| 4 | APR | 1980 | 700 | 95.291664 | 86.391289 | -20.984797 | 0.2 | -2.3 |
| 4 | APR | 1980 | 800 | 95.333336 | 86.391319 | -20.997929 | 0.0 | -2.7 |
| 4 | APR | 1980 | 839 | 95.360413 | 86.391296 | -21.007088 | -0.2 | -2.7 |
| 4 | APR | 1980 | 900 | 95.3750000 | 86.391273 | -21.011932 | -0.2 | -2.6 |
| 4 | APR | 1980 | 1000 | 95.416664 | 86.391174 | -21.024122 | -0.4 | -1.9 |
| 4 | APR | 1980 | 1100 | 95.458336 | 86.391022 | -21.030626 | -0.6 | -0.5 |
| 4 | APR | 1980 | 1200 | 95.5000000 | 86.390816 | -21.028427 | -0.7 | 1.3 |
| 4 | APR | 1980 | 1214 | 95.509727 | 86.390762 | -21.026560 | -0.7 | 1.8 |
| 4 | APR | 1980 | 1300 | 95.541664 | 86.390564 | -21.017122 | -0.9 | 2.9 |
| 4 | APR | 1980 | 1400 | 95.583336 | 86.390244 | -20.999954 | -1.1 | 3.5 |
| 4 | APR | 1980 | 1500 | 95.6250000 | 86.389847 | -20.983952 | -1.4 | 2.5 |
| 4 | APR | 1980 | 1600 | 95.6666604 | 86.389366 | -20.976917 | -1.6 | 0.1 |
| 4 | APR | 1980 | 1700 | 95.708336 | 86.388809 | -20.984728 | -1.8 | -3.1 |
| 4 | APR | 1980 | 1800 | 95.7500000 | 86.388222 | -21.008715 | -1.8 | -6.0 |
| 4 | APR | 1980 | 1900 | 95.791664 | 86.387680 | -21.043056 | -1.5 | -6.9 |
| 4 | APR | 1980 | 1932 | 95.813896 | 86.387451 | -21.061110 | -1.2 | -6.2 |
| 4 | APR | 1980 | 2000 | 95.833336 | 86.387299 | -21.074610 | -0.8 | -5.0 |
| 4 | APR | 1980 | 2046 | 95.865273 | 86.387177 | -21.088543 | -0.2 | -1.9 |
| 4 | APR | 1980 | 2100 | 95.8750000 | 86.387161 | -21.090084 | -0.1 | -0.7 |
| 4 | APR | 1980 | 2200 | 95.916664 | 86.387138 | -21.085630 | -0.3 | 1.6 |
| 4 | APR | 1980 | 2205 | 95.920135 | 86.387123 | -21.084961 | -0.4 | 1.6 |
| 4 | APR | 1980 | 2257 | 95.956245 | 86.386909 | -21.079454 | -1.0 | 0.7 |
| 4 | APR | 1980 | 2300 | 95.958336 | 86.386894 | -21.079277 | -1.0 | 0.7 |
| 4 | APR | 1980 | 2325 | 95.975700 | 86.386749 | -21.078485 | -1.1 | 0.1 |
| 4 | APR | 1980 | 2352 | 95.994446 | 86.386581 | -21.078503 | -1.1 | -0.1 |
| 5 | APR | 1980 | 0 | 96.0000000 | 86.386536 | -21.078583 | -1.1 | -0.1 |
| 5 | APR | 1980 | 20 | 96.013885 | 86.386429 | -21.078869 | -0.9 | -0.2 |
| 5 | APR | 1980 | 44 | 96.030556 | 86.386322 | -21.079458 | -0.7 | -0.4 |
| 5 | APR | 1980 | 100 | 96.041664 | 86.386269 | -21.079992 | -0.6 | -0.4 |
| 5 | APR | 1980 | 200 | 96.083336 | 86.386139 | -21.084032 | -0.4 | -1.3 |

FRAM 2 NAVIGATION - KALMAN

| DAY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|-----|-----|------|------|-----------|-----------|------------|--------|--------|
| 5 | APR | 1980 | 207 | 96.088196 | 86.386124 | -21.084896 | -0.4 | -1.5 |
| 5 | APR | 1980 | 230 | 96.104164 | 86.386070 | -21.088530 | -0.5 | -2.2 |
| 5 | APR | 1980 | 257 | 96.122917 | 86.385994 | -21.094460 | -0.6 | -3.0 |
| 5 | APR | 1980 | 300 | 96.125000 | 86.385979 | -21.095230 | -0.6 | -3.0 |
| 5 | APR | 1980 | 354 | 96.162498 | 86.385811 | -21.111151 | -0.4 | -3.5 |
| 5 | APR | 1980 | 400 | 96.166664 | 86.385796 | -21.112925 | -0.3 | -3.4 |
| 5 | APR | 1980 | 416 | 96.177713 | 86.385788 | -21.117422 | 0.0 | -3.1 |
| 5 | APR | 1980 | 500 | 96.208336 | 86.385895 | -21.126774 | 0.8 | -1.6 |
| 5 | APR | 1980 | 511 | 96.215973 | 86.385948 | -21.128090 | 1.0 | -1.1 |
| 5 | APR | 1980 | 600 | 96.250000 | 86.386246 | -21.130360 | 0.9 | -0.5 |
| 5 | APR | 1980 | 629 | 96.270142 | 86.386337 | -21.132395 | 0.2 | -1.3 |
| 5 | APR | 1980 | 658 | 96.290276 | 86.386307 | -21.137115 | -0.5 | -2.5 |
| 5 | APR | 1980 | 700 | 96.291664 | 86.386307 | -21.137558 | -0.5 | -2.6 |
| 5 | APR | 1980 | 800 | 96.333336 | 86.386086 | -21.152769 | -0.4 | -2.3 |
| 5 | APR | 1980 | 815 | 96.343750 | 86.386070 | -21.155109 | 0.0 | -1.4 |
| 5 | APR | 1980 | 846 | 96.365273 | 86.386116 | -21.156818 | 0.4 | -0.1 |
| 5 | APR | 1980 | 900 | 96.375000 | 86.386147 | -21.156683 | 0.5 | 0.3 |
| 5 | APR | 1980 | 1000 | 96.416664 | 86.386284 | -21.155228 | 0.2 | -0.3 |
| 5 | APR | 1980 | 1100 | 96.458336 | 86.386292 | -21.162106 | 0.0 | -2.2 |
| 5 | APR | 1980 | 1124 | 96.474998 | 86.386292 | -21.166986 | 0.1 | -2.5 |
| 5 | APR | 1980 | 1200 | 96.500000 | 86.386322 | -21.175018 | 0.2 | -2.5 |
| 5 | APR | 1980 | 1220 | 96.513885 | 86.386345 | -21.179096 | 0.2 | -2.2 |
| 5 | APR | 1980 | 1300 | 96.541664 | 86.386398 | -21.186249 | 0.3 | -2.1 |
| 5 | APR | 1980 | 1312 | 96.549995 | 86.386421 | -21.188467 | 0.3 | -2.2 |
| 5 | APR | 1980 | 1331 | 96.563194 | 86.386459 | -21.192291 | 0.5 | -2.5 |
| 5 | APR | 1980 | 1400 | 96.583336 | 86.386551 | -21.199131 | 0.7 | -3.0 |
| 5 | APR | 1980 | 1500 | 96.625000 | 86.386909 | -21.217001 | 1.5 | -3.8 |
| 5 | APR | 1980 | 1500 | 96.625000 | 86.386909 | -21.217001 | 1.5 | -3.8 |
| 5 | APR | 1980 | 1516 | 96.636108 | 86.387047 | -21.222345 | 1.7 | -4.0 |
| 5 | APR | 1980 | 1554 | 96.662498 | 86.387428 | -21.236385 | 1.9 | -4.8 |
| 5 | APR | 1980 | 1600 | 96.666664 | 86.387489 | -21.238880 | 1.8 | -4.9 |
| 5 | APR | 1980 | 1624 | 96.683327 | 86.387711 | -21.249676 | 1.5 | -5.5 |
| 5 | APR | 1980 | 1647 | 96.699310 | 86.387856 | -21.260891 | 0.9 | -5.8 |
| 5 | APR | 1980 | 1700 | 96.708336 | 86.387901 | -21.267399 | 0.4 | -5.9 |
| 5 | APR | 1980 | 1701 | 96.709023 | 86.387901 | -21.267902 | 0.4 | -5.9 |
| 5 | APR | 1980 | 1740 | 96.736115 | 86.387901 | -21.287441 | -0.3 | -5.7 |
| 5 | APR | 1980 | 1800 | 96.750000 | 86.387871 | -21.297012 | -0.2 | -5.4 |
| 5 | APR | 1980 | 1810 | 96.755950 | 86.387871 | -21.301611 | -0.1 | -5.3 |
| 5 | APR | 1980 | 1900 | 96.791664 | 86.387985 | -21.324543 | 1.1 | -5.9 |
| 5 | APR | 1980 | 1926 | 96.809723 | 86.388199 | -21.338959 | 1.9 | -7.1 |
| 5 | APR | 1980 | 2000 | 96.833336 | 86.388626 | -21.362898 | 2.7 | -9.3 |
| 5 | APR | 1980 | 2100 | 96.875000 | 86.389572 | -21.417122 | 2.8 | -10.8 |
| 5 | APR | 1980 | 2113 | 96.884020 | 86.389763 | -21.428909 | 2.6 | -10.4 |
| 5 | APR | 1980 | 2144 | 96.905555 | 86.390160 | -21.454155 | 2.2 | -8.3 |
| 5 | APR | 1980 | 2200 | 96.916664 | 86.390343 | -21.464430 | 2.0 | -6.7 |
| 5 | APR | 1980 | 2259 | 96.957642 | 86.390846 | -21.489006 | 1.2 | -4.3 |
| 5 | APR | 1980 | 2300 | 96.958336 | 86.390854 | -21.489368 | 1.2 | -4.3 |
| 5 | APR | 1980 | 2354 | 96.995827 | 86.391220 | -21.513809 | 1.6 | -6.6 |
| 6 | APR | 1980 | 0 | 97.000000 | 86.391273 | -21.517305 | 1.8 | -7.0 |
| 6 | APR | 1980 | 46 | 97.031944 | 86.391785 | -21.548063 | 2.1 | -8.0 |
| 6 | APR | 1980 | 100 | 97.041664 | 86.391937 | -21.557596 | 2.0 | -7.8 |
| 6 | APR | 1980 | 118 | 97.054169 | 86.392120 | -21.569563 | 1.8 | -7.7 |
| 6 | APR | 1980 | 140 | 97.069450 | 86.392342 | -21.584021 | 1.9 | -7.7 |
| 6 | APR | 1980 | 200 | 97.083336 | 86.392563 | -21.597248 | 2.2 | -7.8 |
| 6 | APR | 1980 | 300 | 97.125000 | 86.393532 | -21.636951 | 3.8 | -7.4 |
| 6 | APR | 1980 | 305 | 97.128471 | 86.393639 | -21.640116 | 4.0 | -7.3 |
| 6 | APR | 1980 | 327 | 97.143745 | 86.394150 | -21.653564 | 4.7 | -6.9 |
| 6 | APR | 1980 | 400 | 97.150004 | 86.395058 | -21.672400 | 5.2 | -6.5 |
| 6 | APR | 1980 | 419 | 97.179863 | 86.395584 | -21.683256 | 5.1 | -6.8 |
| 6 | APR | 1980 | 453 | 97.203468 | 86.396423 | -21.704048 | 3.8 | -7.5 |
| 6 | APR | 1980 | 500 | 97.208336 | 86.396561 | -21.708624 | 3.5 | -7.7 |
| 6 | APR | 1980 | 600 | 97.250000 | 86.397278 | -21.750891 | 1.3 | -8.4 |
| 6 | APR | 1980 | 606 | 97.254173 | 86.397324 | -21.755238 | 1.2 | -8.4 |
| 6 | APR | 1980 | 700 | 97.291664 | 86.397659 | -21.793322 | 1.4 | -7.8 |
| 6 | APR | 1980 | 754 | 97.329103 | 86.398193 | -21.826906 | 2.2 | -6.6 |
| 6 | APR | 1980 | 800 | 97.333336 | 86.398262 | -21.830290 | 2.2 | -6.5 |
| 6 | APR | 1980 | 828 | 97.352776 | 86.398613 | -21.845095 | 2.3 | -6.8 |
| 6 | APR | 1980 | 848 | 97.350009 | 86.398857 | -21.854824 | 2.2 | -5.5 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|-----------|-----------|------------|--------|--------|
| 6 | APR | 1980 | 900 | 97.375000 | 86.398994 | -21.860367 | 2.0 | -5.3 |
| 6 | APR | 1980 | 941 | 97.403473 | 86.399391 | -21.878143 | 1.6 | -4.9 |
| 6 | APR | 1980 | 1000 | 97.416664 | 86.399551 | -21.886095 | 1.4 | -4.8 |
| 6 | APR | 1980 | 1100 | 97.458336 | 86.399918 | -21.908998 | 0.8 | -3.8 |
| 6 | APR | 1980 | 1128 | 97.477776 | 86.400002 | -21.916954 | 0.4 | -2.8 |
| 6 | APR | 1980 | 1200 | 97.500000 | 86.400032 | -21.923540 | -0.1 | -2.0 |
| 6 | APR | 1980 | 1300 | 97.541664 | 86.399963 | -21.934397 | -0.1 | -2.9 |
| 6 | APR | 1980 | 1349 | 97.575091 | 86.400009 | -21.952551 | 0.6 | -5.8 |
| 6 | APR | 1980 | 1400 | 97.583336 | 86.400047 | -21.958435 | 0.8 | -6.6 |
| 6 | APR | 1980 | 1500 | 97.625000 | 86.400490 | -21.998936 | 1.9 | -8.3 |
| 6 | APR | 1980 | 1536 | 97.650002 | 86.400925 | -22.023764 | 2.4 | -7.6 |
| 6 | APR | 1980 | 1600 | 97.666664 | 86.401253 | -22.038506 | 2.6 | -6.7 |
| 6 | APR | 1980 | 1648 | 97.700005 | 86.401970 | -22.062904 | 2.9 | -5.2 |
| 6 | APR | 1980 | 1700 | 97.708336 | 86.402153 | -22.068077 | 2.9 | -4.8 |
| 6 | APR | 1980 | 1722 | 97.723610 | 86.402512 | -22.076706 | 3.0 | -4.3 |
| 6 | APR | 1980 | 1800 | 97.750000 | 86.403152 | -22.089493 | 3.2 | -3.6 |
| 6 | APR | 1980 | 1835 | 97.774300 | 86.403740 | -22.100361 | 2.9 | -3.7 |
| 6 | APR | 1980 | 1900 | 97.791664 | 86.404099 | -22.108597 | 2.4 | -4.0 |
| 6 | APR | 1980 | 2000 | 97.833336 | 86.404648 | -22.131113 | 1.0 | -4.5 |
| 6 | APR | 1980 | 2021 | 97.847923 | 86.404724 | -22.139233 | 0.5 | -4.4 |
| 6 | APR | 1980 | 2055 | 97.871529 | 86.404770 | -22.150574 | 0.1 | -3.1 |
| 6 | APR | 1980 | 2100 | 97.875000 | 86.404778 | -22.151827 | 0.1 | -2.7 |
| 6 | APR | 1980 | 2200 | 97.916664 | 86.404930 | -22.156794 | 1.2 | 0.7 |
| 6 | APR | 1980 | 2207 | 97.921532 | 86.404976 | -22.156281 | 1.4 | 1.0 |
| 6 | APR | 1980 | 2300 | 97.958336 | 86.405571 | -22.148615 | 2.4 | 1.7 |
| 6 | APR | 1980 | 2305 | 97.961800 | 86.405632 | -22.147905 | 2.4 | 1.6 |
| 7 | APR | 1980 | 0 | 98.000000 | 86.406273 | -22.145023 | 1.8 | -0.7 |
| 7 | APR | 1980 | 29 | 98.020142 | 86.406509 | -22.148857 | 1.2 | -2.3 |
| 7 | APR | 1980 | 52 | 98.036110 | 86.406639 | -22.154327 | 0.9 | -3.2 |
| 7 | APR | 1980 | 100 | 98.041664 | 86.406670 | -22.156584 | 0.8 | -3.4 |
| 7 | APR | 1980 | 200 | 98.083336 | 86.406830 | -22.176264 | 0.2 | -3.8 |
| 7 | APR | 1980 | 216 | 98.094444 | 86.406845 | -22.181381 | 0.1 | -3.6 |
| 7 | APR | 1980 | 238 | 98.109718 | 86.406860 | -22.187824 | 0.1 | -3.2 |
| 7 | APR | 1980 | 300 | 98.125000 | 86.406883 | -22.193331 | 0.3 | -2.6 |
| 7 | APR | 1980 | 400 | 98.166664 | 86.407143 | -22.203201 | 1.4 | -1.3 |
| 7 | APR | 1980 | 500 | 98.208336 | 86.407768 | -22.208595 | 2.3 | -1.0 |
| 7 | APR | 1980 | 514 | 98.218056 | 86.407944 | -22.209837 | 2.3 | -1.1 |
| 7 | APR | 1980 | 600 | 98.250000 | 86.408485 | -22.214067 | 1.9 | -0.9 |
| 7 | APR | 1980 | 700 | 98.291664 | 86.408890 | -22.217491 | 0.5 | -0.4 |
| 7 | APR | 1980 | 701 | 98.292356 | 86.408897 | -22.217524 | 0.5 | -0.4 |
| 7 | APR | 1980 | 758 | 98.331940 | 86.408890 | -22.220699 | -0.2 | -1.4 |
| 7 | APR | 1980 | 800 | 98.333336 | 86.408882 | -22.220949 | -0.2 | -1.5 |
| 7 | APR | 1980 | 848 | 98.336669 | 86.408882 | -22.229107 | 0.3 | -1.9 |
| 7 | APR | 1980 | 900 | 98.375000 | 86.408905 | -22.230972 | 0.5 | -1.6 |
| 7 | APR | 1980 | 926 | 98.393059 | 86.408997 | -22.233736 | 0.8 | -0.8 |
| 7 | APR | 1980 | 946 | 98.406944 | 86.409081 | -22.234386 | 0.8 | 0.0 |
| 7 | APR | 1980 | 1000 | 98.416664 | 86.409142 | -22.234058 | 0.8 | 0.5 |
| 7 | APR | 1980 | 1036 | 98.441673 | 86.409264 | -22.230602 | 0.4 | 1.6 |
| 7 | APR | 1980 | 1100 | 98.458336 | 86.409294 | -22.226748 | 0.0 | 2.1 |
| 7 | APR | 1980 | 1133 | 98.481255 | 86.409256 | -22.220583 | -0.4 | 2.1 |
| 7 | APR | 1980 | 1200 | 98.500000 | 86.409180 | -22.216206 | -0.5 | 1.6 |
| 7 | APR | 1980 | 1300 | 98.541664 | 86.408997 | -22.213137 | -0.5 | -0.4 |
| 7 | APR | 1980 | 1300 | 98.541664 | 86.408997 | -22.213137 | -0.5 | -0.4 |
| 7 | APR | 1980 | 1321 | 98.555252 | 86.408936 | -22.214512 | -0.5 | -1.0 |
| 7 | APR | 1980 | 1400 | 98.583336 | 86.408844 | -22.218336 | -0.4 | -1.0 |
| 7 | APR | 1980 | 1500 | 98.625000 | 86.408699 | -22.220827 | -0.5 | -0.1 |
| 7 | APR | 1980 | 1508 | 98.630554 | 86.408676 | -22.220871 | -0.5 | 0.0 |
| 7 | APR | 1980 | 1556 | 98.663667 | 86.408562 | -22.221634 | -0.3 | -0.7 |
| 7 | APR | 1980 | 1600 | 98.666664 | 86.408554 | -22.221884 | -0.2 | -0.3 |
| 7 | APR | 1980 | 1634 | 98.690277 | 86.408546 | -22.225124 | 0.1 | -1.2 |
| 7 | APR | 1980 | 1656 | 98.705559 | 86.408554 | -22.226927 | 0.1 | -0.7 |
| 7 | APR | 1980 | 1700 | 98.708336 | 86.408554 | -22.227142 | 0.1 | -0.6 |
| 7 | APR | 1980 | 1743 | 98.738190 | 86.408554 | -22.227348 | -0.2 | 0.3 |
| 7 | APR | 1980 | 1800 | 98.750000 | 86.408524 | -22.226820 | -0.3 | 0.4 |
| 7 | APR | 1980 | 1820 | 98.763885 | 86.408485 | -22.226082 | -0.5 | 0.4 |
| 7 | APR | 1980 | 1900 | 98.791664 | 86.408379 | -22.224974 | -0.4 | 0.1 |
| 7 | APR | 1980 | 2000 | 98.833336 | 86.408340 | -22.225676 | 0.2 | -0.3 |
| 7 | APR | 1980 | 2100 | 98.875000 | 86.408463 | -22.226902 | 0.4 | 0.1 |

FRAM 2 NAVIGATION - KALMAN

| DAY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|-----|-----|------|------|------------|-----------|------------|--------|--------|
| 7 | APR | 1980 | 2115 | 98.885414 | 86.408493 | -22.226641 | 0.3 | 0.3 |
| 7 | APR | 1980 | 2200 | 98.916664 | 86.408516 | -22.223755 | -0.2 | 1.2 |
| 7 | APR | 1980 | 2300 | 98.958336 | 86.408302 | -22.216942 | -1.0 | 1.1 |
| 7 | APR | 1980 | 2302 | 98.959724 | 86.408295 | -22.216763 | -1.0 | 1.0 |
| 7 | APR | 1980 | 2333 | 98.981255 | 86.408119 | -22.215136 | -1.0 | 0.1 |
| 8 | APR | 1980 | 0 | 99.000000 | 86.407990 | -22.215981 | -0.8 | -0.8 |
| 8 | APR | 1980 | 2 | 99.001396 | 86.407982 | -22.216118 | -0.8 | -0.8 |
| 8 | APR | 1980 | 48 | 99.033333 | 86.407784 | -22.220619 | -1.1 | -1.1 |
| 8 | APR | 1980 | 100 | 99.041664 | 86.407700 | -22.221590 | -1.4 | -0.8 |
| 8 | APR | 1980 | 119 | 99.054863 | 86.407532 | -22.222637 | -1.8 | -0.5 |
| 8 | APR | 1980 | 149 | 99.075691 | 86.407227 | -22.223072 | -1.8 | 0.1 |
| 8 | APR | 1980 | 200 | 99.083336 | 86.407127 | -22.222862 | -1.6 | 0.3 |
| 8 | APR | 1980 | 300 | 99.125000 | 86.406776 | -22.219219 | -0.6 | 0.9 |
| 8 | APR | 1980 | 305 | 99.128471 | 86.406761 | -22.218834 | -0.5 | 0.9 |
| 8 | APR | 1980 | 336 | 99.150002 | 86.406715 | -22.216448 | -0.1 | 0.9 |
| 8 | APR | 1980 | 400 | 99.166664 | 86.406715 | -22.214687 | 0.0 | 0.8 |
| 8 | APR | 1980 | 422 | 99.181946 | 86.406715 | -22.213522 | 0.0 | 0.4 |
| 8 | APR | 1980 | 451 | 99.202087 | 86.406685 | -22.213255 | -0.3 | -0.2 |
| 8 | APR | 1980 | 500 | 99.208336 | 86.406662 | -22.213507 | -0.5 | -0.4 |
| 8 | APR | 1980 | 600 | 99.250000 | 86.406403 | -22.217726 | -1.1 | -0.9 |
| 8 | APR | 1980 | 700 | 99.291664 | 86.406052 | -22.219780 | -0.9 | 0.3 |
| 8 | APR | 1980 | 756 | 99.330559 | 86.405930 | -22.214853 | 0.1 | 1.5 |
| 8 | APR | 1980 | 800 | 99.333336 | 86.405930 | -22.214338 | 0.2 | 1.5 |
| 8 | APR | 1980 | 856 | 99.372223 | 86.406097 | -22.208347 | 0.7 | 0.5 |
| 8 | APR | 1980 | 900 | 99.375000 | 86.406113 | -22.208204 | 0.7 | 0.3 |
| 8 | APR | 1980 | 944 | 99.405556 | 86.406212 | -22.209797 | 0.0 | -0.9 |
| 8 | APR | 1980 | 1000 | 99.416664 | 86.406197 | -22.211248 | -0.4 | -1.2 |
| 8 | APR | 1980 | 1044 | 99.447227 | 86.406021 | -22.216381 | -0.9 | -1.5 |
| 8 | APR | 1980 | 1100 | 99.458336 | 86.405952 | -22.218433 | -0.8 | -1.5 |
| 8 | APR | 1980 | 1130 | 99.479164 | 86.405830 | -22.221865 | -0.6 | -1.1 |
| 8 | APR | 1980 | 1200 | 99.500000 | 86.405754 | -22.223749 | -0.5 | -0.4 |
| 8 | APR | 1980 | 1231 | 99.521523 | 86.405655 | -22.224089 | -0.8 | 0.1 |
| 8 | APR | 1980 | 1300 | 99.541664 | 86.405495 | -22.223621 | -1.3 | 0.3 |
| 8 | APR | 1980 | 1400 | 99.583336 | 86.405006 | -22.221172 | -1.3 | 0.7 |
| 8 | APR | 1980 | 1419 | 99.596527 | 86.404892 | -22.219942 | -0.9 | 0.8 |
| 8 | APR | 1980 | 1500 | 99.625000 | 86.404846 | -22.217592 | 0.7 | 0.3 |
| 8 | APR | 1980 | 1524 | 99.641663 | 86.405014 | -22.217804 | 1.9 | -0.5 |
| 8 | APR | 1980 | 1545 | 99.656250 | 86.405281 | -22.219456 | 2.8 | -1.3 |
| 8 | APR | 1980 | 1600 | 99.656664 | 86.405540 | -22.221443 | 3.4 | -1.8 |
| 8 | APR | 1980 | 1606 | 99.670837 | 86.405647 | -22.222404 | 3.6 | -1.9 |
| 8 | APR | 1980 | 1651 | 99.702087 | 86.406441 | -22.230389 | 1.9 | -1.7 |
| 8 | APR | 1980 | 1700 | 99.708336 | 86.406509 | -22.231537 | 0.9 | -1.3 |
| 8 | APR | 1980 | 1800 | 99.750000 | 86.406013 | -22.232800 | -3.2 | 0.6 |
| 8 | APR | 1980 | 1837 | 99.775696 | 86.405342 | -22.229664 | -3.1 | 1.3 |
| 8 | APR | 1980 | 1854 | 99.787498 | 86.405083 | -22.227684 | -2.5 | 1.4 |
| 8 | APR | 1980 | 1900 | 99.791664 | 86.405006 | -22.226919 | -2.2 | 1.5 |
| 8 | APR | 1980 | 2000 | 99.833336 | 86.404724 | -22.218882 | 0.4 | 1.3 |
| 8 | APR | 1980 | 2024 | 99.844998 | 86.404839 | -22.216665 | 1.2 | 0.8 |
| 8 | APR | 1980 | 2100 | 99.875000 | 86.405151 | -22.215311 | 1.8 | 0.1 |
| 8 | APR | 1980 | 2200 | 99.916664 | 86.405663 | -22.216503 | 0.9 | -0.2 |
| 8 | APR | 1980 | 2210 | 99.923615 | 86.405693 | -22.216646 | 0.5 | -0.1 |
| 8 | APR | 1980 | 2300 | 99.958336 | 86.405609 | -22.215605 | -1.0 | 0.7 |
| 8 | APR | 1980 | 2356 | 99.997223 | 86.405266 | -22.211592 | -0.9 | 0.6 |
| 9 | APR | 1980 | 0 | 100.000000 | 86.405251 | -22.211388 | -0.8 | 0.5 |
| 9 | APR | 1980 | 11 | 100.007637 | 86.405212 | -22.210981 | -0.5 | 0.3 |
| 9 | APR | 1980 | 100 | 100.041664 | 86.405258 | -22.212088 | 0.9 | -0.8 |
| 9 | APR | 1980 | 100 | 100.041664 | 86.405258 | -22.212088 | 0.9 | -0.8 |
| 9 | APR | 1980 | 157 | 100.081245 | 86.405602 | -22.216869 | 0.6 | -0.7 |
| 9 | APR | 1980 | 200 | 100.083336 | 86.405609 | -22.217039 | 0.5 | -0.6 |
| 9 | APR | 1980 | 246 | 100.115273 | 86.405540 | -22.216940 | -0.9 | 0.7 |
| 9 | APR | 1980 | 300 | 100.125000 | 86.405464 | -22.215796 | -1.1 | 1.2 |
| 9 | APR | 1980 | 400 | 100.166664 | 86.405037 | -22.206688 | -1.4 | 2.0 |
| 9 | APR | 1980 | 500 | 100.208336 | 86.404610 | -22.198612 | -1.3 | 0.9 |
| 9 | APR | 1980 | 517 | 100.220146 | 86.404495 | -22.197729 | -1.2 | 0.3 |
| 9 | APR | 1980 | 600 | 100.250000 | 86.404236 | -22.198515 | -0.9 | -0.6 |
| 9 | APR | 1980 | 700 | 100.291664 | 86.404083 | -22.202135 | 0.1 | -0.5 |
| 9 | APR | 1980 | 704 | 100.294441 | 86.404091 | -22.202288 | 0.2 | -0.4 |
| 9 | APR | 1980 | 800 | 100.333336 | 86.404236 | -22.203342 | 0.5 | -0.3 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 9 | APR | 1980 | 807 | 100.338196 | 86.404251 | -22.203564 | 0.4 | -0.4 |
| 9 | APR | 1980 | 851 | 100.368752 | 86.404289 | -22.206253 | -0.1 | -1.0 |
| 9 | APR | 1980 | 900 | 100.375000 | 86.404282 | -22.207037 | -0.2 | -1.1 |
| 9 | APR | 1980 | 954 | 100.412498 | 86.404175 | -22.211905 | -0.5 | -0.8 |
| 9 | APR | 1980 | 1000 | 100.416664 | 86.404160 | -22.212263 | -0.5 | -0.6 |
| 9 | APR | 1980 | 1038 | 100.443054 | 86.404053 | -22.212736 | -0.5 | 0.4 |
| 9 | APR | 1980 | 1100 | 100.458336 | 86.403984 | -22.211189 | -0.5 | 1.2 |
| 9 | APR | 1980 | 1142 | 100.487495 | 86.403870 | -22.205074 | -0.6 | 2.0 |
| 9 | APR | 1980 | 1200 | 100.500000 | 86.403809 | -22.202003 | -0.7 | 2.0 |
| 9 | APR | 1980 | 1300 | 100.541664 | 86.403564 | -22.195181 | -0.8 | 0.2 |
| 9 | APR | 1980 | 1310 | 100.548615 | 86.403519 | -22.195230 | -0.8 | -0.3 |
| 9 | APR | 1980 | 1330 | 100.562500 | 86.403435 | -22.196575 | -0.8 | -1.2 |
| 9 | APR | 1980 | 1400 | 100.583336 | 86.403320 | -22.200705 | -0.7 | -1.9 |
| 9 | APR | 1980 | 1500 | 100.625000 | 86.403160 | -22.209599 | -0.3 | -1.2 |
| 9 | APR | 1980 | 1600 | 100.666664 | 86.403145 | -22.211620 | 0.2 | 0.2 |
| 9 | APR | 1980 | 1643 | 100.696526 | 86.403214 | -22.209921 | 0.3 | 0.6 |
| 9 | APR | 1980 | 1700 | 100.708336 | 86.403244 | -22.209085 | 0.3 | 0.6 |
| 9 | APR | 1980 | 1800 | 100.750000 | 86.403305 | -22.206905 | -0.1 | 0.2 |
| 9 | APR | 1980 | 1900 | 100.791664 | 86.403145 | -22.207001 | -0.9 | -0.1 |
| 9 | APR | 1980 | 1932 | 100.813896 | 86.402977 | -22.207031 | -1.1 | 0.1 |
| 9 | APR | 1980 | 2000 | 100.833336 | 86.402817 | -22.206306 | -1.0 | 0.5 |
| 9 | APR | 1980 | 2016 | 100.844444 | 86.402740 | -22.205433 | -0.8 | 0.8 |
| 9 | APR | 1980 | 2038 | 100.859718 | 86.402657 | -22.203793 | -0.6 | 0.9 |
| 9 | APR | 1980 | 2100 | 100.875000 | 86.402611 | -22.202093 | -0.3 | 0.8 |
| 9 | APR | 1980 | 2200 | 100.916664 | 86.402580 | -22.199680 | -0.1 | 0.0 |
| 9 | APR | 1980 | 2225 | 100.934029 | 86.402565 | -22.200031 | -0.2 | -0.3 |
| 9 | APR | 1980 | 2300 | 100.958336 | 86.402504 | -22.201448 | -0.3 | -0.5 |
| 10 | APR | 1980 | 0 | 101.000000 | 86.402451 | -22.203672 | 0.2 | -0.2 |
| 10 | APR | 1980 | 12 | 101.008331 | 86.402473 | -22.203791 | 0.4 | 0.0 |
| 10 | APR | 1980 | 100 | 101.041664 | 86.402626 | -22.203583 | 0.6 | 0.0 |
| 10 | APR | 1980 | 137 | 101.067360 | 86.402695 | -22.204504 | 0.0 | -0.6 |
| 10 | APR | 1980 | 158 | 101.081940 | 86.402664 | -22.205782 | -0.5 | -0.8 |
| 10 | APR | 1980 | 200 | 101.083336 | 86.402657 | -22.205929 | -0.6 | -0.9 |
| 10 | APR | 1980 | 300 | 101.125000 | 86.402306 | -22.211069 | -1.4 | -0.9 |
| 10 | APR | 1980 | 325 | 101.142365 | 86.402107 | -22.212700 | -1.4 | -0.6 |
| 10 | APR | 1980 | 344 | 101.155556 | 86.401970 | -22.213474 | -1.3 | -0.3 |
| 10 | APR | 1980 | 400 | 101.166664 | 86.401855 | -22.213783 | -1.2 | -0.1 |
| 10 | APR | 1980 | 422 | 101.181940 | 86.401726 | -22.213705 | -1.0 | 0.2 |
| 10 | APR | 1980 | 500 | 101.208336 | 86.401550 | -22.212513 | -0.7 | 0.5 |
| 10 | APR | 1980 | 600 | 101.250000 | 86.401382 | -22.209520 | -0.4 | 0.6 |
| 10 | APR | 1980 | 700 | 101.291664 | 86.401230 | -22.207092 | -0.6 | 0.3 |
| 10 | APR | 1980 | 800 | 101.333336 | 86.400993 | -22.206123 | -0.9 | 0.0 |
| 10 | APR | 1980 | 900 | 101.375000 | 86.400688 | -22.207170 | -0.9 | -0.5 |
| 10 | APR | 1980 | 906 | 101.379173 | 86.400658 | -22.207430 | -0.9 | -0.5 |
| 10 | APR | 1980 | 1000 | 101.416664 | 86.400475 | -22.211460 | -0.2 | -1.2 |
| 10 | APR | 1980 | 1053 | 101.453408 | 86.400551 | -22.217705 | 0.7 | -1.3 |
| 10 | APR | 1980 | 1100 | 101.458336 | 86.400574 | -22.218430 | 0.8 | -1.2 |
| 10 | APR | 1980 | 1134 | 101.481941 | 86.400734 | -22.220676 | 0.9 | -0.3 |
| 10 | APR | 1980 | 1200 | 101.500000 | 86.400848 | -22.220201 | 0.7 | 0.7 |
| 10 | APR | 1980 | 1240 | 101.527779 | 86.400917 | -22.216347 | 0.0 | 1.3 |
| 10 | APR | 1980 | 1300 | 101.541664 | 86.400894 | -22.214180 | -0.4 | 1.2 |
| 10 | APR | 1980 | 1400 | 101.583336 | 86.400696 | -22.211544 | -0.5 | -0.4 |
| 10 | APR | 1980 | 1408 | 101.588890 | 86.400673 | -22.211926 | -0.4 | -0.7 |
| 10 | APR | 1980 | 1428 | 101.602776 | 86.400650 | -22.213724 | -0.1 | -1.3 |
| 10 | APR | 1980 | 1500 | 101.625000 | 86.400681 | -22.217941 | 0.4 | -1.5 |
| 10 | APR | 1980 | 1600 | 101.656664 | 86.400871 | -22.222429 | 0.4 | 0.2 |
| 10 | APR | 1980 | 1615 | 101.677086 | 86.400894 | -22.221760 | 0.2 | 0.9 |
| 10 | APR | 1980 | 1654 | 101.704153 | 86.400871 | -22.217266 | -0.3 | 1.5 |
| 10 | APR | 1980 | 1700 | 101.708336 | 86.400864 | -22.216516 | -0.3 | 1.4 |
| 10 | APR | 1980 | 1741 | 101.736809 | 86.400772 | -22.212864 | -0.4 | 0.5 |
| 10 | APR | 1980 | 1800 | 101.750000 | 86.400734 | -22.212511 | -0.4 | -0.1 |
| 10 | APR | 1980 | 1840 | 101.777779 | 86.400658 | -22.214481 | -0.4 | -0.9 |
| 10 | APR | 1980 | 1900 | 101.791664 | 86.400612 | -22.216200 | -0.4 | -1.0 |
| 10 | APR | 1980 | 1928 | 101.811104 | 86.400543 | -22.218622 | -0.5 | -0.9 |
| 10 | APR | 1980 | 2000 | 101.833336 | 86.400459 | -22.220398 | -0.4 | -0.4 |
| 10 | APR | 1980 | 2026 | 101.851387 | 86.400406 | -22.220577 | -0.3 | 0.2 |
| 10 | APR | 1980 | 2100 | 101.875000 | 86.400368 | -22.218969 | 0.0 | 0.9 |
| 10 | APR | 1980 | 2114 | 101.884727 | 86.400375 | -22.217758 | 0.1 | 1.1 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|-------------|-----------|------------|--------|--------|
| 10 | APR | 1980 | 2136 | 101.9000002 | 86.400406 | -22.215466 | 0.4 | 1.3 |
| 10 | APR | 1980 | 2200 | 101.9166664 | 86.400459 | -22.213037 | 0.5 | 1.1 |
| 10 | APR | 1980 | 2213 | 101.925690 | 86.400497 | -22.211969 | 0.5 | 0.9 |
| 10 | APR | 1980 | 2300 | 101.9583336 | 86.400597 | -22.210426 | 0.3 | -0.2 |
| 10 | APR | 1980 | 2322 | 101.973610 | 86.400627 | -22.211334 | 0.2 | -0.8 |
| 10 | APR | 1980 | 2359 | 101.999306 | 86.400635 | -22.214598 | -0.2 | -1.1 |
| 11 | APR | 1980 | 0 | 102.0000000 | 86.400635 | -22.214695 | -0.2 | -1.1 |
| 11 | APR | 1980 | 100 | 102.0416664 | 86.400520 | -22.219854 | -0.2 | -0.8 |
| 11 | APR | 1980 | 109 | 102.047913 | 86.400513 | -22.220478 | -0.1 | -0.8 |
| 11 | APR | 1980 | 200 | 102.0833336 | 86.400551 | -22.223080 | 0.3 | -0.4 |
| 11 | APR | 1980 | 256 | 102.122223 | 86.400620 | -22.223209 | -0.1 | 0.4 |
| 11 | APR | 1980 | 300 | 102.125000 | 86.400612 | -22.223055 | -0.2 | 0.5 |
| 11 | APR | 1980 | 400 | 102.1666664 | 86.400475 | -22.217949 | -0.4 | 1.4 |
| 11 | APR | 1980 | 423 | 102.182640 | 86.400436 | -22.214882 | -0.2 | 1.7 |
| 11 | APR | 1980 | 500 | 102.2083336 | 86.400436 | -22.208830 | 0.2 | 2.1 |
| 11 | APR | 1980 | 500 | 102.2083336 | 86.400436 | -22.208830 | 0.2 | 2.1 |
| 11 | APR | 1980 | 520 | 102.222221 | 86.400467 | -22.205011 | 0.4 | 2.3 |
| 11 | APR | 1980 | 600 | 102.2500000 | 86.400581 | -22.197079 | 0.6 | 2.2 |
| 11 | APR | 1980 | 700 | 102.2916664 | 86.400795 | -22.189867 | 0.7 | 0.3 |
| 11 | APR | 1980 | 800 | 102.3333336 | 86.400970 | -22.194321 | 0.3 | -1.8 |
| 11 | APR | 1980 | 816 | 102.344444 | 86.400993 | -22.197035 | 0.1 | -2.1 |
| 11 | APR | 1980 | 854 | 102.370827 | 86.400955 | -22.204340 | -0.5 | -2.1 |
| 11 | APR | 1980 | 900 | 102.3750000 | 86.400940 | -22.205399 | -0.6 | -2.0 |
| 11 | APR | 1980 | 1000 | 102.4166664 | 86.400650 | -22.213257 | -1.0 | -1.2 |
| 11 | APR | 1980 | 1004 | 102.419441 | 86.400627 | -22.213652 | -1.0 | -1.1 |
| 11 | APR | 1980 | 1042 | 102.445831 | 86.400459 | -22.216822 | -0.6 | -0.8 |
| 11 | APR | 1980 | 1100 | 102.4583336 | 86.400406 | -22.217892 | -0.4 | -0.6 |
| 11 | APR | 1980 | 1151 | 102.493752 | 86.400375 | -22.220341 | 0.1 | -0.7 |
| 11 | APR | 1980 | 1200 | 102.5000000 | 86.400383 | -22.220936 | 0.2 | -0.8 |
| 11 | APR | 1980 | 1300 | 102.5416664 | 86.400490 | -22.226128 | 0.3 | -0.9 |
| 11 | APR | 1980 | 1400 | 102.5833336 | 86.400467 | -22.227636 | -0.5 | 0.7 |
| 11 | APR | 1980 | 1500 | 102.6250000 | 86.400223 | -22.218952 | -0.8 | 2.4 |
| 11 | APR | 1980 | 1526 | 102.643059 | 86.400124 | -22.213348 | -0.6 | 2.5 |
| 11 | APR | 1980 | 1600 | 102.6666664 | 86.400085 | -22.207066 | 0.3 | 1.5 |
| 11 | APR | 1980 | 1602 | 102.668060 | 86.400093 | -22.206812 | 0.4 | 1.4 |
| 11 | APR | 1980 | 1652 | 102.702782 | 86.400360 | -22.205482 | 1.4 | -0.6 |
| 11 | APR | 1980 | 1700 | 102.7083336 | 86.400421 | -22.206001 | 1.4 | -0.9 |
| 11 | APR | 1980 | 1748 | 102.741669 | 86.400726 | -22.211510 | 0.5 | -1.5 |
| 11 | APR | 1980 | 1800 | 102.7500000 | 86.400742 | -22.213100 | 0.0 | -1.5 |
| 11 | APR | 1980 | 1839 | 102.777077 | 86.400566 | -22.217918 | -1.5 | -1.3 |
| 11 | APR | 1980 | 1900 | 102.7916664 | 86.400360 | -22.220066 | -2.1 | -1.1 |
| 11 | APR | 1980 | 2000 | 102.8333336 | 86.399536 | -22.223684 | -2.7 | -0.3 |
| 11 | APR | 1980 | 2100 | 102.8750000 | 86.398766 | -22.222652 | -1.9 | 0.7 |
| 11 | APR | 1980 | 2200 | 102.9166664 | 86.398346 | -22.217234 | -0.6 | 1.4 |
| 11 | APR | 1980 | 2300 | 102.9583336 | 86.398376 | -22.209021 | 0.7 | 1.7 |
| 12 | APR | 1980 | 0 | 103.0000000 | 86.398781 | -22.200346 | 1.7 | 1.6 |
| 12 | APR | 1980 | 100 | 103.0416664 | 86.399391 | -22.193651 | 2.0 | 1.0 |
| 12 | APR | 1980 | 200 | 103.0833336 | 86.400002 | -22.190897 | 1.7 | 0.1 |
| 12 | APR | 1980 | 300 | 103.1250000 | 86.400421 | -22.192936 | 0.9 | -0.8 |
| 12 | APR | 1980 | 400 | 103.1666664 | 86.400558 | -22.198914 | 0.0 | -1.4 |
| 12 | APR | 1980 | 428 | 103.186104 | 86.400528 | -22.202322 | -0.4 | -1.4 |
| 12 | APR | 1980 | 500 | 103.2083336 | 86.400436 | -22.206209 | -0.7 | -1.4 |
| 12 | APR | 1980 | 600 | 103.2500000 | 86.400200 | -22.211746 | -0.6 | -0.7 |
| 12 | APR | 1980 | 614 | 103.259727 | 86.400154 | -22.212410 | -0.5 | -0.4 |
| 12 | APR | 1980 | 700 | 103.2916664 | 86.400101 | -22.212978 | 0.1 | 0.0 |
| 12 | APR | 1980 | 800 | 103.3333336 | 86.400253 | -22.213583 | 0.8 | -0.5 |
| 12 | APR | 1980 | 802 | 103.334724 | 86.400261 | -22.213682 | 0.8 | -0.6 |
| 12 | APR | 1980 | 900 | 103.3750000 | 86.400581 | -22.219494 | 1.1 | -1.7 |
| 12 | APR | 1980 | 1000 | 103.4166664 | 86.400887 | -22.229303 | 0.6 | -1.8 |
| 12 | APR | 1980 | 1100 | 103.4583336 | 86.400970 | -22.235472 | -0.2 | -0.3 |
| 12 | APR | 1980 | 1136 | 103.4833337 | 86.400902 | -22.234106 | -0.5 | 1.2 |
| 12 | APR | 1980 | 1200 | 103.5000000 | 86.400826 | -22.230574 | -0.6 | 2.2 |
| 12 | APR | 1980 | 1249 | 103.534027 | 86.400696 | -22.217756 | -0.2 | 3.6 |
| 12 | APR | 1980 | 1300 | 103.5416664 | 86.400688 | -22.214226 | 0.0 | 3.8 |
| 12 | APR | 1980 | 1400 | 103.5833336 | 86.400818 | -22.196369 | 0.7 | 2.3 |
| 12 | APR | 1980 | 1500 | 103.6250000 | 86.401039 | -22.193827 | 0.5 | -1.3 |
| 12 | APR | 1980 | 1510 | 103.631950 | 86.401062 | -22.195185 | 0.3 | -1.9 |
| 12 | APR | 1980 | 1600 | 103.6666664 | 86.401070 | -22.205261 | -0.3 | -1.9 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 12 | APR | 1980 | 1604 | 103.669441 | 86.401062 | -22.205896 | -0.4 | -1.7 |
| 12 | APR | 1980 | 1624 | 103.683327 | 86.401009 | -22.207993 | -0.6 | -0.7 |
| 12 | APR | 1980 | 1656 | 103.705559 | 86.400879 | -22.207970 | -0.9 | 0.5 |
| 12 | APR | 1980 | 1700 | 103.708336 | 86.400864 | -22.207769 | -0.9 | 0.6 |
| 12 | APR | 1980 | 1800 | 103.750000 | 86.400581 | -22.203846 | -0.7 | 0.4 |
| 12 | APR | 1980 | 1843 | 103.779854 | 86.400467 | -22.204683 | -0.2 | -0.8 |
| 12 | APR | 1980 | 1900 | 103.791664 | 86.400459 | -22.206217 | 0.0 | -1.3 |
| 12 | APR | 1980 | 2000 | 103.833336 | 86.400475 | -22.215599 | 0.0 | -2.1 |
| 12 | APR | 1980 | 2029 | 103.853477 | 86.400459 | -22.220722 | -0.3 | -1.9 |
| 12 | APR | 1980 | 2100 | 103.875000 | 86.400398 | -22.224651 | -0.4 | -0.9 |
| 12 | APR | 1980 | 2124 | 103.891663 | 86.400337 | -22.225193 | -0.4 | 0.4 |
| 12 | APR | 1980 | 2200 | 103.916664 | 86.400276 | -22.221243 | -0.2 | 2.0 |
| 12 | APR | 1980 | 2215 | 103.927086 | 86.400269 | -22.218449 | 0.0 | 2.3 |
| 12 | APR | 1980 | 2300 | 103.958336 | 86.400322 | -22.210714 | 0.3 | 0.9 |
| 12 | APR | 1980 | 2331 | 103.979858 | 86.400383 | -22.211714 | 0.3 | -1.7 |
| 13 | APR | 1980 | 0 | 104.000000 | 86.400406 | -22.218863 | 0.1 | -3.8 |
| 13 | APR | 1980 | 2 | 104.001396 | 86.400406 | -22.219538 | 0.1 | -4.0 |
| 13 | APR | 1980 | 100 | 104.041664 | 86.400368 | -22.242111 | -0.3 | -4.1 |
| 13 | APR | 1980 | 200 | 104.083336 | 86.400215 | -22.253700 | -0.6 | -0.2 |
| 13 | APR | 1980 | 300 | 104.125000 | 86.400032 | -22.244450 | -0.5 | 3.4 |
| 13 | APR | 1980 | 400 | 104.166664 | 86.399918 | -22.222639 | -0.1 | 4.5 |
| 13 | APR | 1980 | 500 | 104.208336 | 86.399986 | -22.203449 | 0.6 | 2.6 |
| 13 | APR | 1980 | 522 | 104.223610 | 86.400078 | -22.199722 | 0.9 | 1.4 |
| 13 | APR | 1980 | 600 | 104.250000 | 86.400330 | -22.198515 | 1.5 | -0.6 |
| 13 | APR | 1980 | 700 | 104.291664 | 86.400879 | -22.206770 | 1.6 | -2.1 |
| 13 | APR | 1980 | 710 | 104.298615 | 86.400963 | -22.208588 | 1.5 | -2.1 |
| 13 | APR | 1980 | 800 | 104.333336 | 86.401207 | -22.216167 | 0.0 | -1.1 |
| 13 | APR | 1980 | 825 | 104.350700 | 86.401123 | -22.217480 | -1.2 | -0.1 |
| 13 | APR | 1980 | 857 | 104.372917 | 86.400826 | -22.216482 | -2.0 | 0.7 |
| 13 | APR | 1980 | 900 | 104.375000 | 86.400795 | -22.216288 | -2.0 | 0.8 |
| 13 | APR | 1980 | 1000 | 104.416664 | 86.400238 | -22.211554 | -0.9 | 0.7 |
| 13 | APR | 1980 | 1012 | 104.424995 | 86.400192 | -22.210964 | -0.4 | 0.5 |
| 13 | APR | 1980 | 1044 | 104.447227 | 86.400215 | -22.210201 | 0.7 | 0.2 |
| 13 | APR | 1980 | 1100 | 104.458336 | 86.400291 | -22.209902 | 1.1 | 0.2 |
| 13 | APR | 1980 | 1200 | 104.500000 | 86.400711 | -22.208525 | 1.0 | 0.2 |
| 13 | APR | 1980 | 1200 | 104.500000 | 86.400711 | -22.208525 | 1.0 | 0.2 |
| 13 | APR | 1980 | 1300 | 104.541664 | 86.400772 | -22.208284 | -0.6 | -0.1 |
| 13 | APR | 1980 | 1400 | 104.583336 | 86.400429 | -22.208563 | -1.2 | 0.1 |
| 13 | APR | 1980 | 1500 | 104.625000 | 86.400169 | -22.207233 | -0.2 | 0.3 |
| 13 | APR | 1980 | 1503 | 104.627083 | 86.400169 | -22.207153 | -0.1 | 0.3 |
| 13 | APR | 1980 | 1600 | 104.666664 | 86.400284 | -22.207161 | 0.7 | -0.6 |
| 13 | APR | 1980 | 1604 | 104.669441 | 86.400299 | -22.207376 | 0.7 | -0.7 |
| 13 | APR | 1980 | 1648 | 104.700005 | 86.400475 | -22.211416 | 0.6 | -1.2 |
| 13 | APR | 1980 | 1700 | 104.708336 | 86.400505 | -22.212679 | 0.5 | -1.2 |
| 13 | APR | 1980 | 1751 | 104.743752 | 86.400551 | -22.216942 | -0.2 | -0.5 |
| 13 | APR | 1980 | 1800 | 104.750000 | 86.400536 | -22.217354 | -0.4 | -0.4 |
| 13 | APR | 1980 | 1833 | 104.772919 | 86.400436 | -22.217628 | -0.7 | 0.3 |
| 13 | APR | 1980 | 1900 | 104.791664 | 86.400330 | -22.216351 | -0.8 | 0.8 |
| 13 | APR | 1980 | 1937 | 104.817360 | 86.400192 | -22.213724 | -0.5 | 0.7 |
| 13 | APR | 1980 | 2000 | 104.833336 | 86.400146 | -22.212772 | -0.2 | 0.2 |
| 13 | APR | 1980 | 2100 | 104.875000 | 86.400185 | -22.213671 | 0.4 | -0.4 |
| 13 | APR | 1980 | 2124 | 104.891663 | 86.400246 | -22.214338 | 0.5 | -0.3 |
| 13 | APR | 1980 | 2200 | 104.916664 | 86.400368 | -22.214569 | 0.7 | 0.2 |
| 13 | APR | 1980 | 2242 | 104.945831 | 86.400543 | -22.212639 | 0.8 | 0.9 |
| 13 | APR | 1980 | 2300 | 104.958336 | 86.400620 | -22.210896 | 0.9 | 1.3 |
| 13 | APR | 1980 | 2310 | 104.955279 | 86.400673 | -22.209675 | 0.9 | 1.5 |
| 13 | APR | 1980 | 2350 | 104.993050 | 86.400841 | -22.204113 | 0.6 | 1.4 |
| 14 | APR | 1980 | 0 | 105.000000 | 86.400864 | -22.202988 | 0.4 | 1.2 |
| 14 | APR | 1980 | 100 | 105.041664 | 86.400879 | -22.200874 | -0.3 | -0.4 |
| 14 | APR | 1980 | 136 | 105.066673 | 86.400803 | -22.203224 | -0.5 | -1.0 |
| 14 | APR | 1980 | 200 | 105.083336 | 86.400734 | -22.205578 | -0.5 | -1.2 |
| 14 | APR | 1980 | 300 | 105.125000 | 86.400558 | -22.211348 | -0.6 | -0.8 |
| 14 | APR | 1980 | 322 | 105.140282 | 86.400490 | -22.212496 | -0.5 | -0.4 |
| 14 | APR | 1980 | 400 | 105.166664 | 86.400375 | -22.212870 | -0.5 | 0.1 |
| 14 | APR | 1980 | 402 | 105.168060 | 86.400368 | -22.212851 | -0.5 | 0.1 |
| 14 | APR | 1980 | 430 | 105.187500 | 86.400314 | -22.212400 | -0.2 | 0.2 |
| 14 | APR | 1980 | 500 | 105.208336 | 86.400307 | -22.212400 | 0.1 | -0.2 |
| 14 | APR | 1980 | 508 | 105.213890 | 86.400314 | -22.212559 | 0.2 | -0.3 |

FRA 4 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 14 | APR | 1980 | 600 | 105.250000 | 86.400429 | -22.214584 | 0.6 | -0.5 |
| 14 | APR | 1980 | 617 | 105.261810 | 86.400482 | -22.215181 | 0.6 | -0.3 |
| 14 | APR | 1980 | 654 | 105.287498 | 86.400566 | -22.215408 | 0.2 | 0.3 |
| 14 | APR | 1980 | 700 | 105.291664 | 86.400574 | -22.215214 | 0.1 | 0.5 |
| 14 | APR | 1980 | 800 | 105.333336 | 86.400467 | -22.211145 | -0.5 | 0.7 |
| 14 | APR | 1980 | 804 | 105.336113 | 86.400452 | -22.210920 | -0.5 | 0.6 |
| 14 | APR | 1980 | 900 | 105.375000 | 86.400337 | -22.210541 | -0.1 | -0.5 |
| 14 | APR | 1980 | 952 | 105.411110 | 86.400414 | -22.214069 | 0.6 | -0.9 |
| 14 | APR | 1980 | 1000 | 105.416664 | 86.400444 | -22.214657 | 0.7 | -0.8 |
| 14 | APR | 1980 | 1100 | 105.458336 | 86.400688 | -22.216959 | 0.6 | 0.1 |
| 14 | APR | 1980 | 1110 | 105.465279 | 86.400719 | -22.216724 | 0.5 | 0.4 |
| 14 | APR | 1980 | 1139 | 105.485413 | 86.400772 | -22.214945 | 0.2 | 1.0 |
| 14 | APR | 1980 | 1200 | 105.500000 | 86.400780 | -22.213051 | 0.0 | 1.1 |
| 14 | APR | 1980 | 1210 | 105.506950 | 86.400780 | -22.212158 | -0.1 | 1.0 |
| 14 | APR | 1980 | 1258 | 105.540276 | 86.400734 | -22.208847 | -0.2 | 0.6 |
| 14 | APR | 1980 | 1300 | 105.541664 | 86.400726 | -22.208755 | -0.2 | 0.5 |
| 14 | APR | 1980 | 1400 | 105.583336 | 86.400673 | -22.206930 | -0.1 | 0.3 |
| 14 | APR | 1980 | 1445 | 105.614586 | 86.400681 | -22.205772 | 0.1 | 0.1 |
| 14 | APR | 1980 | 1500 | 105.625000 | 86.400696 | -22.205845 | 0.2 | -0.2 |
| 14 | APR | 1980 | 1512 | 105.633331 | 86.400703 | -22.206200 | 0.2 | -0.5 |
| 14 | APR | 1980 | 1540 | 105.652779 | 86.400734 | -22.208029 | 0.1 | -1.0 |
| 14 | APR | 1980 | 1600 | 105.666664 | 86.400742 | -22.209858 | 0.0 | -1.1 |
| 14 | APR | 1980 | 1632 | 105.688896 | 86.400711 | -22.212627 | -0.4 | -0.8 |
| 14 | APR | 1980 | 1659 | 105.707642 | 86.400627 | -22.214001 | -0.7 | -0.4 |
| 14 | APR | 1980 | 1700 | 105.708336 | 86.400627 | -22.214033 | -0.7 | -0.4 |
| 14 | APR | 1980 | 1726 | 105.726387 | 86.400505 | -22.214777 | -0.9 | -0.3 |
| 14 | APR | 1980 | 1800 | 105.750000 | 86.400345 | -22.216032 | -0.8 | -0.6 |
| 14 | APR | 1980 | 1845 | 105.731250 | 86.400215 | -22.219618 | -0.2 | -1.1 |
| 14 | APR | 1980 | 1900 | 105.791664 | 86.400215 | -22.221090 | 0.1 | -1.1 |
| 14 | APR | 1980 | 1911 | 105.799309 | 86.400223 | -22.222153 | 0.3 | -1.1 |
| 14 | APR | 1980 | 1946 | 105.823608 | 86.400330 | -22.224825 | 0.9 | -0.6 |
| 14 | APR | 1980 | 2000 | 105.833336 | 86.400406 | -22.225288 | 1.0 | -0.2 |
| 14 | APR | 1980 | 2032 | 105.855560 | 86.400604 | -22.225109 | 1.2 | 0.2 |
| 14 | APR | 1980 | 2100 | 105.875000 | 86.400780 | -22.224611 | 1.1 | 0.1 |
| 14 | APR | 1980 | 2153 | 105.911804 | 86.401031 | -22.226173 | 0.6 | -0.9 |
| 14 | APR | 1980 | 2200 | 105.916664 | 86.401054 | -22.226759 | 0.5 | -1.1 |
| 14 | APR | 1980 | 2218 | 105.929169 | 86.401093 | -22.228689 | 0.3 | -1.4 |
| 14 | APR | 1980 | 2230 | 105.958336 | 86.401100 | -22.234549 | -0.2 | -1.7 |
| 14 | APR | 1980 | 2340 | 105.986115 | 86.401024 | -22.240837 | -0.4 | -2.1 |
| 15 | APR | 1980 | 0 | 106.000000 | 86.400986 | -22.244900 | -0.3 | -2.7 |
| 15 | APR | 1980 | 4 | 106.002777 | 86.400986 | -22.245846 | -0.2 | -2.8 |
| 15 | APR | 1980 | 28 | 106.019440 | 86.400986 | -22.252871 | 0.4 | -4.1 |
| 15 | APR | 1980 | 100 | 106.041664 | 86.401169 | -22.267834 | 1.9 | -6.9 |
| 15 | APR | 1980 | 126 | 106.059723 | 86.401535 | -22.286301 | 3.3 | -9.6 |
| 15 | APR | 1980 | 200 | 106.083336 | 86.402237 | -22.318747 | 4.0 | -12.4 |
| 15 | APR | 1980 | 214 | 106.093056 | 86.402542 | -22.334171 | 3.9 | -13.2 |
| 15 | APR | 1980 | 300 | 106.125000 | 86.403519 | -22.386387 | 4.4 | -12.0 |
| 15 | APR | 1980 | 312 | 106.133331 | 86.403824 | -22.398146 | 4.9 | -10.7 |
| 15 | APR | 1980 | 400 | 106.166664 | 86.405235 | -22.434404 | 5.6 | -7.4 |
| 15 | APR | 1980 | 400 | 106.166664 | 86.405235 | -22.434404 | 5.6 | -7.4 |
| 15 | APR | 1980 | 500 | 106.208336 | 86.406921 | -22.472776 | 4.7 | -8.5 |
| 15 | APR | 1980 | 525 | 106.225700 | 86.407532 | -22.493097 | 4.4 | -10.4 |
| 15 | APR | 1980 | 546 | 106.240273 | 86.408020 | -22.513271 | 4.1 | -11.9 |
| 15 | APR | 1980 | 600 | 106.250000 | 86.408318 | -22.528286 | 3.8 | -12.9 |
| 15 | APR | 1980 | 700 | 106.291664 | 86.409248 | -22.601955 | 1.6 | -14.7 |
| 15 | APR | 1980 | 712 | 106.299995 | 86.409332 | -22.617092 | 1.0 | -14.5 |
| 15 | APR | 1980 | 800 | 106.333336 | 86.409401 | -22.676416 | 0.1 | -14.2 |
| 15 | APR | 1980 | 834 | 106.356941 | 86.409508 | -22.718346 | 1.2 | -14.5 |
| 15 | APR | 1980 | 900 | 106.375000 | 86.409737 | -22.751553 | 2.1 | -15.1 |
| 15 | APR | 1980 | 900 | 106.375000 | 86.409737 | -22.751553 | 2.1 | -15.1 |
| 15 | APR | 1980 | 1000 | 106.416664 | 86.410583 | -22.831772 | 2.8 | -15.4 |
| 15 | APR | 1980 | 1021 | 106.431252 | 86.410904 | -22.859179 | 2.7 | -14.8 |
| 15 | APR | 1980 | 1100 | 106.458336 | 86.411430 | -22.907064 | 2.3 | -13.5 |
| 15 | APR | 1980 | 1200 | 106.500000 | 86.412056 | -22.972408 | 1.5 | -11.9 |
| 15 | APR | 1980 | 1208 | 106.505554 | 86.412125 | -22.980564 | 1.4 | -11.7 |
| 15 | APR | 1980 | 1300 | 106.541664 | 86.412422 | -23.031582 | 0.9 | -11.1 |
| 15 | APR | 1980 | 1356 | 106.580559 | 86.412674 | -23.083357 | 0.8 | -10.3 |
| 15 | APR | 1980 | 1400 | 106.583336 | 86.412689 | -23.086891 | 0.8 | -10.2 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 15 | APR | 1980 | 1500 | 106.625000 | 86.412827 | -23.135983 | -0.2 | -8.6 |
| 15 | APR | 1980 | 1543 | 106.654854 | 86.412682 | -23.166128 | -1.0 | -7.8 |
| 15 | APR | 1980 | 1600 | 106.666664 | 86.412582 | -23.177668 | -1.1 | -7.9 |
| 15 | APR | 1980 | 1607 | 106.671532 | 86.412537 | -23.182457 | -1.1 | -8.0 |
| 15 | APR | 1980 | 1700 | 106.708336 | 86.412308 | -23.222267 | -0.2 | -9.9 |
| 15 | APR | 1980 | 1754 | 106.745827 | 86.412476 | -23.275663 | 1.2 | -12.7 |
| 15 | APR | 1980 | 1800 | 106.750000 | 86.412514 | -23.282318 | 1.3 | -12.9 |
| 15 | APR | 1980 | 1900 | 106.791664 | 86.413033 | -23.349440 | 1.6 | -11.8 |
| 15 | APR | 1980 | 2000 | 106.833336 | 86.413429 | -23.397455 | 0.8 | -6.3 |
| 15 | APR | 1980 | 2044 | 106.863892 | 86.413528 | -23.414959 | 0.1 | -3.5 |
| 15 | APR | 1980 | 2100 | 106.875000 | 86.413528 | -23.419691 | -0.1 | -3.4 |
| 15 | APR | 1980 | 2104 | 106.877777 | 86.413528 | -23.420860 | -0.1 | -3.4 |
| 15 | APR | 1980 | 2200 | 106.916664 | 86.413460 | -23.444056 | -0.3 | -7.5 |
| 15 | APR | 1980 | 2250 | 106.951385 | 86.413383 | -23.488789 | -0.4 | -12.6 |
| 15 | APR | 1980 | 2300 | 106.958336 | 86.413361 | -23.499920 | -0.4 | -13.2 |
| 15 | APR | 1980 | 2312 | 106.966667 | 86.413330 | -23.513874 | -0.5 | -13.7 |
| 16 | APR | 1980 | 0 | 107.000000 | 86.413177 | -23.569675 | -0.5 | -11.8 |
| 16 | APR | 1980 | 37 | 107.025696 | 86.413124 | -23.599358 | 0.1 | -6.4 |
| 16 | APR | 1980 | 100 | 107.041664 | 86.413162 | -23.608328 | 0.6 | -2.6 |
| 16 | APR | 1980 | 200 | 107.083336 | 86.413475 | -23.603456 | 1.1 | 3.0 |
| 16 | APR | 1980 | 224 | 107.099998 | 86.413605 | -23.596779 | 0.9 | 3.3 |
| 16 | APR | 1980 | 300 | 107.125000 | 86.413750 | -23.587269 | 0.5 | 2.6 |
| 16 | APR | 1980 | 400 | 107.166664 | 86.413803 | -23.579756 | -0.1 | 0.2 |
| 16 | APR | 1980 | 500 | 107.208336 | 86.413765 | -23.584164 | 0.0 | -1.5 |
| 16 | APR | 1980 | 600 | 107.250000 | 86.413864 | -23.591524 | 0.7 | -1.1 |
| 16 | APR | 1980 | 620 | 107.263885 | 86.413948 | -23.592989 | 0.9 | -0.6 |
| 16 | APR | 1980 | 700 | 107.291664 | 86.414185 | -23.594116 | 1.2 | -0.1 |
| 16 | APR | 1980 | 744 | 107.322227 | 86.414444 | -23.594961 | 0.9 | -0.5 |
| 16 | APR | 1980 | 800 | 107.333336 | 86.414513 | -23.595810 | 0.7 | -0.8 |
| 16 | APR | 1980 | 900 | 107.375000 | 86.414635 | -23.601557 | 0.2 | -1.2 |
| 16 | APR | 1980 | 932 | 107.397224 | 86.414658 | -23.604641 | 0.1 | -1.0 |
| 16 | APR | 1980 | 1000 | 107.416664 | 86.414673 | -23.606520 | 0.1 | -0.6 |
| 16 | APR | 1980 | 1100 | 107.458336 | 86.414719 | -23.607473 | 0.1 | 0.1 |
| 16 | APR | 1980 | 1200 | 107.500000 | 86.414734 | -23.606148 | -0.1 | 0.2 |
| 16 | APR | 1980 | 1300 | 107.541664 | 86.414642 | -23.606594 | -0.5 | -0.4 |
| 16 | APR | 1980 | 1306 | 107.545837 | 86.414619 | -23.606840 | -0.6 | -0.5 |
| 16 | APR | 1980 | 1400 | 107.583336 | 86.414421 | -23.610352 | -0.7 | -0.9 |
| 16 | APR | 1980 | 1454 | 107.620827 | 86.414253 | -23.613913 | -0.4 | -0.6 |
| 16 | APR | 1980 | 1500 | 107.625000 | 86.414238 | -23.614201 | -0.3 | -0.5 |
| 16 | APR | 1980 | 1511 | 107.632637 | 86.414223 | -23.614647 | -0.2 | -0.4 |
| 16 | APR | 1980 | 1600 | 107.666664 | 86.414200 | -23.614737 | 0.0 | 0.5 |
| 16 | APR | 1980 | 1641 | 107.695137 | 86.414223 | -23.611141 | 0.2 | 1.4 |
| 16 | APR | 1980 | 1700 | 107.708336 | 86.414253 | -23.608738 | 0.4 | 1.5 |
| 16 | APR | 1980 | 1702 | 107.709724 | 86.414253 | -23.608477 | 0.4 | 1.5 |
| 16 | APR | 1980 | 1800 | 107.750000 | 86.414436 | -23.603338 | 0.7 | 0.1 |
| 16 | APR | 1980 | 1848 | 107.783333 | 86.414581 | -23.607140 | 0.3 | -1.8 |
| 16 | APR | 1980 | 1900 | 107.791664 | 86.414597 | -23.609137 | 0.1 | -2.1 |
| 16 | APR | 1980 | 2000 | 107.833336 | 86.414520 | -23.622122 | -0.3 | -2.5 |
| 16 | APR | 1980 | 2034 | 107.855941 | 86.414497 | -23.628828 | 0.0 | -2.0 |
| 16 | APR | 1980 | 2100 | 107.875000 | 86.414520 | -23.632721 | 0.2 | -1.5 |
| 16 | APR | 1980 | 2200 | 107.916664 | 86.414558 | -23.637718 | -0.3 | -0.6 |
| 16 | APR | 1980 | 2220 | 107.930550 | 86.414490 | -23.638588 | -0.9 | -0.4 |
| 16 | APR | 1980 | 2300 | 107.958336 | 86.414192 | -23.639975 | -1.8 | -0.4 |
| 16 | APR | 1980 | 2348 | 107.991669 | 86.413620 | -23.641693 | -2.5 | -0.2 |
| 17 | APR | 1980 | 0 | 108.000000 | 86.413452 | -23.641844 | -2.6 | -0.1 |
| 17 | APR | 1980 | 7 | 108.004860 | 86.413353 | -23.641842 | -2.7 | 0.1 |
| 17 | APR | 1980 | 160 | 108.041664 | 86.412521 | -23.638161 | -3.1 | 1.8 |
| 17 | APR | 1980 | 200 | 108.083336 | 86.411522 | -23.624302 | -2.8 | 3.2 |
| 17 | APR | 1980 | 300 | 108.125000 | 86.410828 | -23.610529 | -1.3 | 1.6 |
| 17 | APR | 1980 | 340 | 108.152779 | 86.410690 | -23.608902 | 0.0 | -0.7 |
| 17 | APR | 1980 | 400 | 108.166664 | 86.410721 | -23.611134 | 0.5 | -1.9 |
| 17 | APR | 1980 | 500 | 108.208336 | 86.410965 | -23.626390 | 0.6 | -3.4 |
| 17 | APR | 1980 | 528 | 108.227776 | 86.411003 | -23.634096 | -0.1 | -3.0 |
| 17 | APR | 1980 | 600 | 108.250000 | 86.410904 | -23.641176 | -1.0 | -2.1 |
| 17 | APR | 1980 | 700 | 108.291664 | 86.410461 | -23.647760 | -1.5 | -0.5 |
| 17 | APR | 1980 | 715 | 108.302086 | 86.410347 | -23.648199 | -1.3 | -0.2 |
| 17 | APR | 1980 | 800 | 108.333336 | 86.410049 | -23.647863 | -1.2 | 0.1 |
| 17 | APR | 1980 | 900 | 108.375000 | 86.409554 | -23.649584 | -2.1 | -1.1 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 17 | APR | 1980 | 902 | 108.376396 | 86.409531 | -23.649780 | -2.2 | -1.2 |
| 17 | APR | 1980 | 1000 | 108.416664 | 86.408577 | -23.659199 | -3.9 | -2.3 |
| 17 | APR | 1980 | 1049 | 108.450091 | 86.407417 | -23.667833 | -4.7 | -1.5 |
| 17 | APR | 1980 | 1100 | 108.458336 | 86.407135 | -23.669119 | -4.8 | -1.2 |
| 17 | APR | 1980 | 1200 | 108.500000 | 86.405540 | -23.669420 | -4.8 | 1.2 |
| 17 | APR | 1980 | 1300 | 108.541664 | 86.404091 | -23.657177 | -4.0 | 3.4 |
| 17 | APR | 1980 | 1400 | 108.583336 | 86.402969 | -23.636736 | -2.9 | 4.2 |
| 17 | APR | 1980 | 1500 | 108.625000 | 86.402206 | -23.616169 | -1.9 | 3.5 |
| 17 | APR | 1980 | 1600 | 108.666664 | 86.401680 | -23.602116 | -1.5 | 1.9 |
| 17 | APR | 1980 | 1610 | 108.673615 | 86.401596 | -23.600580 | -1.5 | 1.6 |
| 17 | APR | 1980 | 1700 | 108.708336 | 86.401138 | -23.595646 | -2.0 | 0.8 |
| 17 | APR | 1980 | 1756 | 108.747223 | 86.400391 | -23.591320 | -3.1 | 1.2 |
| 17 | APR | 1980 | 1800 | 108.750000 | 86.400322 | -23.590891 | -3.1 | 1.3 |
| 17 | APR | 1980 | 1900 | 108.791664 | 86.399101 | -23.581358 | -4.3 | 2.4 |
| 17 | APR | 1980 | 1942 | 108.820831 | 86.398079 | -23.571608 | -4.7 | 3.0 |
| 17 | APR | 1980 | 2000 | 108.833336 | 86.397614 | -23.566807 | -4.8 | 3.2 |
| 17 | APR | 1980 | 2100 | 108.875000 | 86.395988 | -23.548395 | -5.2 | 3.9 |
| 17 | APR | 1980 | 2128 | 108.894440 | 86.395195 | -23.538702 | -5.4 | 4.1 |
| 17 | APR | 1980 | 2200 | 108.916664 | 86.394241 | -23.527365 | -5.7 | 4.0 |
| 17 | APR | 1980 | 2300 | 108.958336 | 86.392235 | -23.511559 | -6.8 | 1.4 |
| 17 | APR | 1980 | 2315 | 108.968750 | 86.391670 | -23.510431 | -7.2 | 0.3 |
| 18 | APR | 1980 | 0 | 109.000000 | 86.389755 | -23.516335 | -8.5 | -3.4 |
| 18 | APR | 1980 | 100 | 109.041664 | 86.386681 | -23.545736 | -10.5 | -7.7 |
| 18 | APR | 1980 | 200 | 109.083336 | 86.382980 | -23.592167 | -12.3 | -9.8 |
| 18 | APR | 1980 | 300 | 109.125000 | 86.378716 | -23.642408 | -13.9 | -9.3 |
| 18 | APR | 1980 | 400 | 109.166664 | 86.374016 | -23.685904 | -15.0 | -7.6 |
| 18 | APR | 1980 | 435 | 109.190971 | 86.371117 | -23.707357 | -15.5 | -6.8 |
| 18 | APR | 1980 | 500 | 109.208336 | 86.368996 | -23.721731 | -15.9 | -6.7 |
| 18 | APR | 1980 | 600 | 109.250000 | 86.363701 | -23.758825 | -16.8 | -8.4 |
| 18 | APR | 1980 | 622 | 109.265282 | 86.361679 | -23.775642 | -17.2 | -9.5 |
| 18 | APR | 1980 | 700 | 109.291664 | 86.358055 | -23.808401 | -18.1 | -10.4 |
| 18 | APR | 1980 | 753 | 109.328468 | 86.352631 | -23.852421 | -19.7 | -8.8 |
| 18 | APR | 1980 | 800 | 109.333336 | 86.351883 | -23.857534 | -19.9 | -8.4 |
| 18 | APR | 1980 | 810 | 109.340279 | 86.350800 | -23.864470 | -20.2 | -7.9 |
| 18 | APR | 1980 | 900 | 109.375000 | 86.345108 | -23.896662 | -22.1 | -8.1 |
| 18 | APR | 1980 | 940 | 109.402779 | 86.340149 | -23.928467 | -23.8 | -10.9 |
| 18 | APR | 1980 | 957 | 109.414581 | 86.337936 | -23.945276 | -24.4 | -12.5 |
| 18 | APR | 1980 | 1000 | 109.416664 | 86.337540 | -23.948475 | -24.5 | -12.7 |
| 18 | APR | 1980 | 1100 | 109.458336 | 86.329445 | -24.019291 | -25.0 | -13.7 |
| 18 | APR | 1980 | 1128 | 109.477776 | 86.325714 | -24.048935 | -24.2 | -11.0 |
| 18 | APR | 1980 | 1144 | 109.488892 | 86.323647 | -24.062300 | -23.5 | -8.7 |
| 18 | APR | 1980 | 1200 | 109.500000 | 86.321655 | -24.072231 | -22.6 | -6.0 |
| 18 | APR | 1980 | 1300 | 109.541664 | 86.314629 | -24.082771 | -21.6 | 0.5 |
| 18 | APR | 1980 | 1315 | 109.552086 | 86.312859 | -24.081800 | -22.0 | 1.0 |
| 18 | APR | 1980 | 1400 | 109.583336 | 86.307289 | -24.078224 | -23.9 | 0.2 |
| 18 | APR | 1980 | 1500 | 109.625000 | 86.299248 | -24.088072 | -25.1 | -4.5 |
| 18 | APR | 1980 | 1600 | 109.666664 | 86.291397 | -24.122665 | -22.6 | -8.9 |
| 18 | APR | 1980 | 1700 | 109.708336 | 86.284752 | -24.171516 | -18.6 | -10.1 |
| 18 | APR | 1980 | 1764 | 109.711113 | 86.284355 | -24.174862 | -18.4 | -10.0 |
| 18 | APR | 1980 | 1800 | 109.750000 | 86.278915 | -24.219408 | -18.5 | -8.9 |
| 18 | APR | 1980 | 1811 | 109.757637 | 86.277794 | -24.227383 | -19.2 | -8.5 |
| 18 | APR | 1980 | 1850 | 109.784721 | 86.273552 | -24.252954 | -20.8 | -7.2 |
| 18 | APR | 1980 | 1900 | 109.791664 | 86.272423 | -24.258774 | -21.1 | -6.8 |
| 18 | APR | 1980 | 2000 | 109.833336 | 86.265320 | -24.287264 | -22.8 | -4.7 |
| 18 | APR | 1980 | 2037 | 109.859032 | 86.260651 | -24.300587 | -23.7 | -4.2 |
| 18 | APR | 1980 | 2100 | 109.875000 | 86.257698 | -24.309046 | -23.7 | -4.7 |
| 18 | APR | 1980 | 2200 | 109.916664 | 86.250488 | -24.342596 | -19.8 | -9.7 |
| 18 | APR | 1980 | 2210 | 109.923615 | 86.249451 | -24.351141 | -18.7 | -11.0 |
| 18 | APR | 1980 | 2223 | 109.932640 | 86.248184 | -24.363745 | -17.4 | -12.5 |
| 18 | APR | 1980 | 2300 | 109.958336 | 86.244865 | -24.404718 | -16.8 | -13.2 |
| 18 | APR | 1980 | 2328 | 109.977776 | 86.242149 | -24.432175 | -19.4 | -10.1 |
| 19 | APR | 1980 | 0 | 110.000000 | 86.238472 | -24.452124 | -23.0 | -4.9 |
| 19 | APR | 1980 | 100 | 110.041664 | 86.230644 | -24.460289 | -23.1 | -0.5 |
| 19 | APR | 1980 | 114 | 110.051392 | 86.228951 | -24.461155 | -21.6 | -1.0 |
| 19 | APR | 1980 | 143 | 110.071526 | 86.225807 | -24.465454 | -18.6 | -2.7 |
| 19 | APR | 1980 | 200 | 110.083336 | 86.224174 | -24.470184 | -17.1 | -4.0 |
| 19 | APR | 1980 | 300 | 110.125000 | 86.219009 | -24.497725 | -16.0 | -6.4 |
| 19 | APR | 1980 | 300 | 110.125000 | 86.219009 | -24.497725 | -16.0 | -6.4 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 19 | APR | 1980 | 400 | 110.166664 | 86.213470 | -24.529772 | -18.0 | -6.6 |
| 19 | APR | 1980 | 446 | 110.198608 | 86.208977 | -24.555332 | -17.7 | -7.1 |
| 19 | APR | 1980 | 500 | 110.208336 | 86.207657 | -24.563589 | -17.3 | -7.3 |
| 19 | APR | 1980 | 600 | 110.250000 | 86.202492 | -24.599979 | -14.3 | -7.1 |
| 19 | APR | 1980 | 632 | 110.272224 | 86.200150 | -24.617170 | -12.9 | -6.0 |
| 19 | APR | 1980 | 700 | 110.291664 | 86.198212 | -24.629484 | -12.9 | -4.8 |
| 19 | APR | 1980 | 703 | 110.293755 | 86.197998 | -24.630640 | -13.0 | -4.6 |
| 19 | APR | 1980 | 718 | 110.304169 | 86.196938 | -24.635912 | -13.4 | -4.0 |
| 19 | APR | 1980 | 800 | 110.333336 | 86.193718 | -24.647755 | -15.1 | -3.2 |
| 19 | APR | 1980 | 850 | 110.368050 | 86.189468 | -24.661745 | -15.9 | -3.9 |
| 19 | APR | 1980 | 900 | 110.375000 | 86.188606 | -24.664972 | -15.7 | -4.1 |
| 19 | APR | 1980 | 905 | 110.378471 | 86.188187 | -24.666658 | -15.6 | -4.2 |
| 19 | APR | 1980 | 1000 | 110.416664 | 86.183632 | -24.685467 | -15.2 | -3.6 |
| 19 | APR | 1980 | 1038 | 110.443054 | 86.180504 | -24.693638 | -15.3 | -1.7 |
| 19 | APR | 1980 | 1052 | 110.452782 | 86.179352 | -24.695135 | -15.3 | -1.0 |
| 19 | APR | 1980 | 1100 | 110.458336 | 86.178688 | -24.695646 | -15.2 | -0.6 |
| 19 | APR | 1980 | 1148 | 110.491669 | 86.174858 | -24.698072 | -13.8 | -1.7 |
| 19 | APR | 1980 | 1200 | 110.500000 | 86.173981 | -24.700260 | -13.2 | -2.8 |
| 19 | APR | 1980 | 1226 | 110.518059 | 86.172211 | -24.708376 | -12.1 | -4.8 |
| 19 | APR | 1980 | 1300 | 110.541664 | 86.170067 | -24.724140 | -11.3 | -6.4 |
| 19 | APR | 1980 | 1334 | 110.565277 | 86.168022 | -24.742228 | -11.0 | -6.5 |
| 19 | APR | 1980 | 1400 | 110.583336 | 86.166473 | -24.755194 | -11.2 | -5.7 |
| 19 | APR | 1980 | 1413 | 110.592354 | 86.165680 | -24.760857 | -11.4 | -5.1 |
| 19 | APR | 1980 | 1500 | 110.625000 | 86.162758 | -24.776695 | -11.3 | -3.5 |
| 19 | APR | 1980 | 1518 | 110.637505 | 86.161682 | -24.781616 | -10.8 | -3.3 |
| 19 | APR | 1980 | 1600 | 110.666664 | 86.159409 | -24.792662 | -9.2 | -3.4 |
| 19 | APR | 1980 | 1700 | 110.708336 | 86.156738 | -24.809896 | -7.7 | -3.5 |
| 19 | APR | 1980 | 1704 | 110.711113 | 86.156570 | -24.811033 | -7.7 | -3.5 |
| 19 | APR | 1980 | 1800 | 110.750000 | 86.154221 | -24.825127 | -8.1 | -2.5 |
| 19 | APR | 1980 | 1849 | 110.784027 | 86.151955 | -24.832422 | -9.1 | -1.2 |
| 19 | APR | 1980 | 1900 | 110.791664 | 86.151405 | -24.833328 | -9.3 | -0.9 |
| 19 | APR | 1980 | 2000 | 110.833336 | 86.148308 | -24.835461 | -9.6 | -0.4 |
| 19 | APR | 1980 | 2100 | 110.875000 | 86.145378 | -24.840191 | -8.2 | -1.9 |
| 19 | APR | 1980 | 2121 | 110.889587 | 86.144485 | -24.844097 | -7.5 | -2.7 |
| 19 | APR | 1980 | 2200 | 110.916664 | 86.143051 | -24.854929 | -6.2 | -4.1 |
| 19 | APR | 1980 | 2300 | 110.958336 | 86.141197 | -24.876640 | -5.5 | -4.4 |
| 20 | APR | 1980 | 0 | 111.000000 | 86.139297 | -24.893875 | -6.4 | -2.4 |
| 20 | APR | 1980 | 6 | 111.004173 | 86.139091 | -24.894985 | -6.5 | -2.2 |
| 20 | APR | 1980 | 100 | 111.041664 | 86.137016 | -24.899776 | -7.5 | -0.3 |
| 20 | APR | 1980 | 152 | 111.077782 | 86.134842 | -24.899456 | -7.8 | 0.2 |
| 20 | APR | 1980 | 200 | 111.083336 | 86.134506 | -24.899353 | -7.9 | 0.1 |
| 20 | APR | 1980 | 240 | 111.111115 | 86.132797 | -24.899275 | -8.0 | -0.1 |
| 20 | APR | 1980 | 300 | 111.125000 | 86.131927 | -24.899536 | -8.0 | -0.2 |
| 20 | APR | 1980 | 338 | 111.151390 | 86.130302 | -24.900606 | -7.7 | -0.5 |
| 20 | APR | 1980 | 400 | 111.166664 | 86.129417 | -24.901569 | -7.2 | -0.6 |
| 20 | APR | 1980 | 500 | 111.208336 | 86.127380 | -24.905668 | -5.3 | -1.1 |
| 20 | APR | 1980 | 600 | 111.250000 | 86.125999 | -24.912344 | -3.4 | -1.7 |
| 20 | APR | 1980 | 700 | 111.291664 | 86.125084 | -24.921476 | -2.4 | -2.1 |
| 20 | APR | 1980 | 710 | 111.298615 | 86.124954 | -24.923141 | -2.4 | -2.1 |
| 20 | APR | 1980 | 800 | 111.333336 | 86.124321 | -24.931517 | -2.4 | -2.0 |
| 20 | APR | 1980 | 900 | 111.375000 | 86.123497 | -24.939114 | -2.7 | -1.0 |
| 20 | APR | 1980 | 1000 | 111.416664 | 86.122551 | -24.939360 | -3.1 | 1.0 |
| 20 | APR | 1980 | 1100 | 111.458336 | 86.121521 | -24.928495 | -3.2 | 3.5 |
| 20 | APR | 1980 | 1200 | 111.500000 | 86.120552 | -24.906296 | -2.8 | 5.6 |
| 20 | APR | 1980 | 1300 | 111.541664 | 86.119759 | -24.878412 | -2.0 | 5.6 |
| 20 | APR | 1980 | 1323 | 111.557640 | 86.119522 | -24.868641 | -1.7 | 5.0 |
| 20 | APR | 1980 | 1400 | 111.583336 | 86.119240 | -24.856209 | -1.1 | 3.3 |
| 20 | APR | 1980 | 1411 | 111.590973 | 86.119179 | -24.853643 | -1.0 | 2.6 |
| 20 | APR | 1980 | 1500 | 111.625000 | 86.119011 | -24.848835 | -0.4 | 0.0 |
| 20 | APR | 1980 | 1556 | 111.663887 | 86.118965 | -24.851387 | 0.0 | -0.6 |
| 20 | APR | 1980 | 1600 | 111.666664 | 86.118965 | -24.851578 | 0.0 | -0.6 |
| 20 | APR | 1980 | 1700 | 111.708336 | 86.118980 | -24.851311 | 0.0 | 0.7 |
| 20 | APR | 1980 | 1741 | 111.736809 | 86.118973 | -24.847574 | -0.1 | 1.5 |
| 20 | APR | 1980 | 1800 | 111.750000 | 86.118958 | -24.845154 | -0.2 | 1.7 |
| 20 | APR | 1980 | 1900 | 111.791664 | 86.118858 | -24.836254 | -0.4 | 1.8 |
| 20 | APR | 1980 | 2000 | 111.833336 | 86.118698 | -24.828547 | -0.5 | 1.3 |
| 20 | APR | 1980 | 2100 | 111.875000 | 86.118515 | -24.824064 | -0.6 | 0.6 |
| 20 | APR | 1980 | 2200 | 111.916664 | 86.118301 | -24.822605 | -0.7 | 0.1 |

FRAM 2 NAVIGATION - KALMAN

| LY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|-------------|-----------|------------|--------|--------|
| 20 | APR | 1980 | 2258 | 111.9556940 | 86.118042 | -24.822241 | -1.0 | 0.2 |
| 20 | APR | 1980 | 2300 | 111.9583336 | 86.118034 | -24.822216 | -1.0 | 0.2 |
| 21 | APR | 1980 | 0 | 112.0000000 | 86.117607 | -24.819988 | -1.6 | 0.9 |
| 21 | APR | 1980 | 4 | 112.002777 | 86.117577 | -24.819702 | -1.7 | 0.9 |
| 21 | APR | 1980 | 44 | 112.030556 | 86.117172 | -24.815792 | -2.0 | 1.5 |
| 21 | APR | 1980 | 100 | 112.041664 | 86.116997 | -24.813745 | -2.0 | 1.7 |
| 21 | APR | 1980 | 200 | 112.0833336 | 86.116333 | -24.805172 | -2.0 | 1.6 |
| 21 | APR | 1980 | 230 | 112.104164 | 86.116028 | -24.801777 | -1.8 | 1.2 |
| 21 | APR | 1980 | 300 | 112.125000 | 86.115746 | -24.799604 | -1.6 | 0.6 |
| 21 | APR | 1980 | 400 | 112.1666664 | 86.115288 | -24.798779 | -1.2 | -0.2 |
| 21 | APR | 1980 | 500 | 112.2083336 | 86.114937 | -24.799908 | -0.9 | -0.1 |
| 21 | APR | 1980 | 600 | 112.2500000 | 86.114662 | -24.798119 | -0.8 | 1.0 |
| 21 | APR | 1980 | 700 | 112.291664 | 86.114426 | -24.789965 | -0.7 | 2.4 |
| 21 | APR | 1980 | 748 | 112.325005 | 86.114250 | -24.779612 | -0.6 | 2.9 |
| 21 | APR | 1980 | 800 | 112.3333336 | 86.114212 | -24.776875 | -0.6 | 2.9 |
| 21 | APR | 1980 | 859 | 112.374306 | 86.114021 | -24.765617 | -0.6 | 1.5 |
| 21 | APR | 1980 | 900 | 112.375000 | 86.114021 | -24.765497 | -0.6 | 1.5 |
| 21 | APR | 1980 | 1000 | 112.416664 | 86.113747 | -24.762655 | -1.3 | 0.0 |
| 21 | APR | 1980 | 1046 | 112.448608 | 86.113266 | -24.762300 | -2.5 | 0.4 |
| 21 | APR | 1980 | 1100 | 112.4583336 | 86.113068 | -24.761745 | -2.9 | 0.6 |
| 21 | APR | 1980 | 1200 | 112.5000000 | 86.111954 | -24.756891 | -3.7 | 1.1 |
| 21 | APR | 1980 | 1234 | 112.523613 | 86.111282 | -24.754421 | -3.6 | 0.6 |
| 21 | APR | 1980 | 1300 | 112.541664 | 86.110786 | -24.754021 | -3.5 | -0.3 |
| 21 | APR | 1980 | 1304 | 112.544441 | 86.110710 | -24.754128 | -3.5 | -0.4 |
| 21 | APR | 1980 | 1400 | 112.5833336 | 86.109604 | -24.759983 | -4.0 | -2.0 |
| 21 | APR | 1980 | 1421 | 112.597923 | 86.109131 | -24.763681 | -4.4 | -2.4 |
| 21 | APR | 1980 | 1449 | 112.617363 | 86.108429 | -24.769249 | -4.9 | -2.6 |
| 21 | APR | 1980 | 1500 | 112.625000 | 86.108139 | -24.771511 | -5.0 | -2.6 |
| 21 | APR | 1980 | 1600 | 112.6666664 | 86.106483 | -24.781527 | -4.8 | -1.1 |
| 21 | APR | 1980 | 1608 | 112.672218 | 86.106277 | -24.782118 | -4.6 | -0.7 |
| 21 | APR | 1980 | 1634 | 112.690277 | 86.105659 | -24.782578 | -4.2 | 0.2 |
| 21 | APR | 1980 | 1700 | 112.7083336 | 86.105103 | -24.781647 | -3.8 | 0.6 |
| 21 | APR | 1980 | 1800 | 112.7500000 | 86.103905 | -24.778736 | -3.7 | 0.3 |
| 21 | APR | 1980 | 1819 | 112.763191 | 86.103516 | -24.778448 | -3.8 | 0.0 |
| 21 | APR | 1980 | 1900 | 112.791664 | 86.102646 | -24.779320 | -4.0 | -0.5 |
| 21 | APR | 1980 | 2000 | 112.8333336 | 86.101311 | -24.783264 | -4.1 | -1.0 |
| 21 | APR | 1980 | 2100 | 112.8750000 | 86.100021 | -24.788410 | -3.8 | -1.1 |
| 21 | APR | 1980 | 2200 | 112.9166664 | 86.098846 | -24.793125 | -3.4 | -0.9 |
| 21 | APR | 1980 | 2256 | 112.955559 | 86.097794 | -24.796791 | -3.7 | -0.8 |
| 21 | APR | 1980 | 2300 | 112.9583336 | 86.097717 | -24.797043 | -3.7 | -0.8 |
| 21 | APR | 1980 | 2336 | 112.983337 | 86.096931 | -24.799410 | -4.4 | -0.9 |
| 22 | APR | 1980 | 0 | 113.0000000 | 86.096336 | -24.801144 | -4.9 | -0.9 |
| 22 | APR | 1980 | 100 | 113.041664 | 86.094627 | -24.805662 | -5.4 | -0.9 |
| 22 | APR | 1980 | 102 | 113.043050 | 86.094574 | -24.805799 | -5.4 | -0.9 |
| 22 | APR | 1980 | 122 | 113.056946 | 86.093987 | -24.807070 | -5.4 | -0.7 |
| 22 | APR | 1980 | 200 | 113.0833336 | 86.092880 | -24.809038 | -5.5 | -0.6 |
| 22 | APR | 1980 | 300 | 113.1250000 | 86.091049 | -24.811972 | -5.9 | -0.8 |
| 22 | APR | 1980 | 308 | 113.130554 | 86.090790 | -24.812496 | -5.9 | -0.9 |
| 22 | APR | 1980 | 400 | 113.1566664 | 86.089081 | -24.817379 | -6.2 | -1.6 |
| 22 | APR | 1980 | 454 | 113.204163 | 86.087280 | -24.825571 | -6.1 | -2.2 |
| 22 | APR | 1980 | 500 | 113.2083336 | 86.087082 | -24.826612 | -6.0 | -2.2 |
| 22 | APR | 1980 | 600 | 113.2500000 | 86.085243 | -24.835941 | -5.2 | -1.3 |
| 22 | APR | 1980 | 640 | 113.277779 | 86.084190 | -24.837837 | -4.6 | 0.1 |
| 22 | APR | 1980 | 700 | 113.291664 | 86.083710 | -24.837023 | -4.3 | 0.9 |
| 22 | APR | 1980 | 751 | 113.327987 | 86.082527 | -24.831465 | -4.5 | 1.5 |
| 22 | APR | 1980 | 800 | 113.3333336 | 86.082306 | -24.830416 | -4.6 | 1.4 |
| 22 | APR | 1980 | 900 | 113.3750000 | 86.080612 | -24.826134 | -6.0 | 0.1 |
| 22 | APR | 1980 | 1000 | 113.4166664 | 86.078423 | -24.829746 | -7.5 | -1.5 |
| 22 | APR | 1980 | 1100 | 113.4583336 | 86.075813 | -24.839615 | -8.4 | -2.4 |
| 22 | APR | 1980 | 1145 | 113.489586 | 86.073730 | -24.847952 | -8.7 | -2.2 |
| 22 | APR | 1980 | 1200 | 113.5000000 | 86.073029 | -24.850542 | -8.7 | -2.1 |
| 22 | APR | 1980 | 1300 | 113.5416664 | 86.070198 | -24.859402 | -8.8 | -1.6 |
| 22 | APR | 1980 | 1332 | 113.563896 | 86.068680 | -24.863115 | -8.7 | -1.3 |
| 22 | APR | 1980 | 1400 | 113.5833336 | 86.067360 | -24.865860 | -8.7 | -1.1 |
| 22 | APR | 1980 | 1500 | 113.6250000 | 86.064568 | -24.870565 | -8.4 | -0.9 |
| 22 | APR | 1980 | 1520 | 113.638885 | 86.063667 | -24.871918 | -8.2 | -0.8 |
| 22 | APR | 1980 | 1600 | 113.6556664 | 86.061935 | -24.874405 | -7.8 | -0.7 |
| 22 | APR | 1980 | 1700 | 113.7083336 | 86.059509 | -24.877546 | -7.2 | -0.6 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 22 | APR | 1980 | 1800 | 113.750000 | 86.057274 | -24.879467 | -6.7 | -0.2 |
| 22 | APR | 1980 | 1900 | 113.791664 | 86.055145 | -24.879221 | -6.5 | 0.4 |
| 22 | APR | 1980 | 2000 | 113.833336 | 86.053017 | -24.875799 | -6.7 | 1.1 |
| 22 | APR | 1980 | 2100 | 113.875000 | 86.050743 | -24.868465 | -7.3 | 2.0 |
| 22 | APR | 1980 | 2200 | 113.916664 | 86.048248 | -24.857151 | -8.1 | 2.8 |
| 22 | APR | 1980 | 2228 | 113.936104 | 86.046997 | -24.850702 | -8.5 | 3.1 |
| 22 | APR | 1980 | 2300 | 113.958336 | 86.045486 | -24.842587 | -8.9 | 3.4 |
| 23 | APR | 1980 | 0 | 114.000000 | 86.042480 | -24.826206 | -9.5 | 3.5 |
| 23 | APR | 1980 | 100 | 114.041664 | 86.039360 | -24.810835 | -9.7 | 3.0 |
| 23 | APR | 1980 | 140 | 114.069450 | 86.037277 | -24.802555 | -9.6 | 2.3 |
| 23 | APR | 1980 | 200 | 114.083336 | 86.036247 | -24.799206 | -9.5 | 2.0 |
| 23 | APR | 1980 | 300 | 114.125000 | 86.033226 | -24.792498 | -9.1 | 0.9 |
| 23 | APR | 1980 | 400 | 114.166664 | 86.030327 | -24.790548 | -8.8 | 0.0 |
| 23 | APR | 1980 | 500 | 114.208336 | 86.027534 | -24.792059 | -8.5 | -0.6 |
| 23 | APR | 1980 | 600 | 114.250000 | 86.024803 | -24.794935 | -8.4 | -0.6 |
| 23 | APR | 1980 | 700 | 114.291664 | 86.022072 | -24.796785 | -8.5 | -0.1 |
| 23 | APR | 1980 | 800 | 114.333336 | 86.019272 | -24.795456 | -8.8 | 0.7 |
| 23 | APR | 1980 | 849 | 114.367363 | 86.016891 | -24.790989 | -9.2 | 1.6 |
| 23 | APR | 1980 | 900 | 114.375000 | 86.016342 | -24.789526 | -9.2 | 1.8 |
| 23 | APR | 1980 | 1000 | 114.416664 | 86.013268 | -24.778797 | -9.7 | 2.7 |
| 23 | APR | 1980 | 1100 | 114.458336 | 86.010063 | -24.764490 | -10.0 | 3.3 |
| 23 | APR | 1980 | 1200 | 114.500000 | 86.006775 | -24.748907 | -10.2 | 3.3 |
| 23 | APR | 1980 | 1300 | 114.541664 | 86.003471 | -24.734989 | -10.1 | 2.6 |
| 23 | APR | 1980 | 1400 | 114.583336 | 86.000229 | -24.725851 | -9.8 | 1.2 |
| 23 | APR | 1980 | 1500 | 114.625000 | 85.997116 | -24.724308 | -9.3 | -0.7 |
| 23 | APR | 1980 | 1600 | 114.666664 | 85.994202 | -24.732418 | -8.7 | -2.9 |
| 23 | APR | 1980 | 1700 | 114.708336 | 85.991501 | -24.751009 | -8.0 | -5.1 |
| 23 | APR | 1980 | 1745 | 114.739586 | 85.989624 | -24.771461 | -7.5 | -6.6 |
| 23 | APR | 1980 | 1800 | 114.750000 | 85.989029 | -24.779385 | -7.3 | -7.1 |
| 23 | APR | 1980 | 1900 | 114.791664 | 85.986732 | -24.815464 | -6.9 | -8.3 |
| 23 | APR | 1980 | 1950 | 114.826385 | 85.984894 | -24.848433 | -6.7 | -8.6 |
| 23 | APR | 1980 | 2000 | 114.833336 | 85.984528 | -24.855101 | -6.7 | -8.6 |
| 23 | APR | 1980 | 2100 | 114.875000 | 85.982353 | -24.894318 | -6.7 | -8.2 |
| 23 | APR | 1980 | 2200 | 114.916664 | 85.980141 | -24.929504 | -6.9 | -6.9 |
| 23 | APR | 1980 | 2300 | 114.958336 | 85.977859 | -24.957813 | -7.1 | -5.2 |
| 24 | APR | 1980 | 0 | 115.000000 | 85.975510 | -24.977459 | -7.3 | -3.2 |
| 24 | APR | 1980 | 100 | 115.041664 | 85.973114 | -24.987646 | -7.5 | -1.2 |
| 24 | APR | 1980 | 200 | 115.083336 | 85.970680 | -24.988460 | -7.5 | 0.8 |
| 24 | APR | 1980 | 300 | 115.125000 | 85.968269 | -24.980881 | -7.4 | 2.5 |
| 24 | APR | 1980 | 400 | 115.166664 | 85.965904 | -24.966505 | -7.2 | 3.7 |
| 24 | APR | 1980 | 500 | 115.208336 | 85.963615 | -24.947653 | -6.9 | 4.4 |
| 24 | APR | 1980 | 600 | 115.250000 | 85.961441 | -24.927183 | -6.5 | 4.4 |
| 24 | APR | 1980 | 610 | 115.256950 | 85.961090 | -24.923840 | -6.5 | 4.3 |
| 24 | APR | 1980 | 700 | 115.291664 | 85.959381 | -24.908155 | -6.2 | 3.8 |
| 24 | APR | 1980 | 800 | 115.333336 | 85.957436 | -24.893452 | -5.9 | 2.5 |
| 24 | APR | 1980 | 900 | 115.375000 | 85.955559 | -24.885944 | -5.7 | 0.7 |
| 24 | APR | 1980 | 1000 | 115.416664 | 85.953720 | -24.887041 | -5.7 | -1.1 |
| 24 | APR | 1980 | 1100 | 115.458336 | 85.951851 | -24.889502 | -5.9 | -2.4 |
| 24 | APR | 1980 | 1127 | 115.477081 | 85.950989 | -24.900663 | -6.0 | -2.6 |
| 24 | APR | 1980 | 1200 | 115.500000 | 85.949898 | -24.907328 | -6.2 | -2.6 |
| 24 | APR | 1980 | 1300 | 115.541664 | 85.947800 | -24.917088 | -6.8 | -1.3 |
| 24 | APR | 1980 | 1312 | 115.549995 | 85.947350 | -24.918083 | -6.9 | -0.9 |
| 24 | APR | 1980 | 1400 | 115.583336 | 85.945457 | -24.917980 | -7.7 | 0.9 |
| 24 | APR | 1980 | 1457 | 115.622917 | 85.943024 | -24.912176 | -7.9 | 1.3 |
| 24 | APR | 1980 | 1500 | 115.625000 | 85.942894 | -24.911892 | -7.9 | 1.2 |
| 24 | APR | 1980 | 1526 | 115.643059 | 85.941811 | -24.910158 | -7.5 | 0.5 |
| 24 | APR | 1980 | 1600 | 115.666664 | 85.940491 | -24.910311 | -6.8 | -0.5 |
| 24 | APR | 1980 | 1642 | 115.695531 | 85.938995 | -24.912544 | -6.4 | -0.6 |
| 24 | APR | 1980 | 1700 | 115.708336 | 85.938370 | -24.913644 | -6.5 | -0.2 |
| 24 | APR | 1980 | 1712 | 115.716667 | 85.937950 | -24.913057 | -6.5 | 0.1 |
| 24 | APR | 1980 | 1800 | 115.750000 | 85.936241 | -24.911701 | -6.7 | 0.7 |
| 24 | APR | 1980 | 1827 | 115.758745 | 85.935249 | -24.909864 | -6.9 | 0.6 |
| 24 | APR | 1980 | 1858 | 115.790276 | 85.934097 | -24.908911 | -6.8 | 0.2 |
| 24 | APR | 1980 | 1900 | 115.791664 | 85.934021 | -24.908880 | -6.7 | 0.2 |
| 24 | APR | 1980 | 2000 | 115.833336 | 85.931946 | -24.909569 | -6.1 | -0.4 |
| 24 | APR | 1980 | 2044 | 115.863892 | 85.930481 | -24.911125 | -6.2 | -0.5 |
| 24 | APR | 1980 | 2100 | 115.875000 | 85.929939 | -24.911634 | -6.4 | -0.4 |
| 24 | APR | 1980 | 2200 | 115.916664 | 85.927711 | -24.912365 | -7.2 | 0.1 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|-------------|-----------|------------|--------|--------|
| 24 | APR | 1980 | 2300 | 115.9583336 | 85.925293 | -24.910143 | -7.6 | 0.8 |
| 24 | APR | 1980 | 2344 | 115.988892 | 85.923508 | -24.906822 | -7.4 | 1.1 |
| 25 | APR | 1980 | 0 | 116.000000 | 85.922867 | -24.905407 | -7.3 | 1.2 |
| 25 | APR | 1980 | 100 | 116.041664 | 85.920509 | -24.900066 | -7.4 | 1.0 |
| 25 | APR | 1980 | 130 | 116.062500 | 85.919289 | -24.898066 | -7.6 | 0.7 |
| 25 | APR | 1980 | 200 | 116.083336 | 85.918030 | -24.896723 | -7.9 | 0.5 |
| 25 | APR | 1980 | 300 | 116.125000 | 85.915436 | -24.895699 | -8.0 | 0.0 |
| 25 | APR | 1980 | 316 | 116.136108 | 85.914749 | -24.895754 | -7.9 | -0.1 |
| 25 | APR | 1980 | 400 | 116.166664 | 85.912865 | -24.897196 | -7.9 | -0.9 |
| 25 | APR | 1980 | 500 | 116.208336 | 85.910210 | -24.904871 | -8.6 | -2.4 |
| 25 | APR | 1980 | 502 | 116.209724 | 85.910110 | -24.905239 | -8.6 | -2.4 |
| 25 | APR | 1980 | 600 | 116.250000 | 85.907265 | -24.913673 | -9.4 | -0.3 |
| 25 | APR | 1980 | 648 | 116.283333 | 85.904770 | -24.905354 | -9.7 | 5.2 |
| 25 | APR | 1980 | 700 | 116.291664 | 85.904144 | -24.899944 | -9.7 | 6.7 |
| 25 | APR | 1980 | 800 | 116.333336 | 85.900955 | -24.885979 | -10.1 | 9.2 |
| 25 | APR | 1980 | 900 | 116.375000 | 85.897552 | -24.831980 | -11.0 | 1.5 |
| 25 | APR | 1980 | 1000 | 116.416664 | 85.893883 | -24.847162 | -11.4 | -6.8 |
| 25 | APR | 1980 | 1019 | 116.429863 | 85.892715 | -24.857679 | -11.3 | -7.7 |
| 25 | APR | 1980 | 1100 | 116.458336 | 85.890305 | -24.877480 | -10.3 | -3.4 |
| 25 | APR | 1980 | 1100 | 116.458336 | 85.890305 | -24.877480 | -10.3 | -3.4 |
| 25 | APR | 1980 | 1200 | 116.500000 | 85.887100 | -24.869444 | -10.1 | 5.0 |
| 25 | APR | 1980 | 1204 | 116.502777 | 85.886879 | -24.867903 | -10.2 | 5.2 |
| 25 | APR | 1980 | 1300 | 116.541664 | 85.883545 | -24.844904 | -11.8 | 4.7 |
| 25 | APR | 1980 | 1349 | 116.575891 | 85.880318 | -24.831865 | -12.4 | 2.7 |
| 25 | APR | 1980 | 1400 | 116.583336 | 85.879578 | -24.829752 | -12.4 | 2.4 |
| 25 | APR | 1980 | 1500 | 116.625000 | 85.875572 | -24.819780 | -12.4 | 2.4 |
| 25 | APR | 1980 | 1534 | 116.648613 | 85.873253 | -24.812918 | -12.7 | 3.1 |
| 25 | APR | 1980 | 1600 | 116.666664 | 85.871445 | -24.806299 | -13.0 | 3.7 |
| 25 | APR | 1980 | 1700 | 116.708336 | 85.867119 | -24.785494 | -13.6 | 5.5 |
| 25 | APR | 1980 | 1719 | 116.721527 | 85.865715 | -24.777195 | -13.7 | 6.1 |
| 25 | APR | 1980 | 1800 | 116.750000 | 85.862648 | -24.757322 | -14.0 | 6.6 |
| 25 | APR | 1980 | 1900 | 116.791664 | 85.858017 | -24.731092 | -14.6 | 4.4 |
| 25 | APR | 1980 | 1904 | 116.794441 | 85.857697 | -24.729816 | -14.7 | 4.1 |
| 25 | APR | 1980 | 2000 | 116.833336 | 85.853165 | -24.720284 | -15.2 | 0.6 |
| 25 | APR | 1980 | 2100 | 116.875000 | 85.848267 | -24.722595 | -14.8 | -0.9 |
| 25 | APR | 1980 | 2200 | 116.916664 | 85.843620 | -24.723316 | -13.7 | 1.2 |
| 25 | APR | 1980 | 2236 | 116.941673 | 85.841026 | -24.717041 | -13.0 | 3.5 |
| 25 | APR | 1980 | 2300 | 116.958336 | 85.839363 | -24.709393 | -12.6 | 5.0 |
| 26 | APR | 1980 | 0 | 117.000000 | 85.835289 | -24.682022 | -12.8 | 6.5 |
| 26 | APR | 1980 | 22 | 117.015282 | 85.833733 | -24.671507 | -13.3 | 6.3 |
| 26 | APR | 1980 | 100 | 117.041664 | 85.830925 | -24.654804 | -14.1 | 5.5 |
| 26 | APR | 1980 | 105 | 117.045135 | 85.830544 | -24.652784 | -14.2 | 5.4 |
| 26 | APR | 1980 | 200 | 117.083336 | 85.826233 | -24.633144 | -14.6 | 4.3 |
| 26 | APR | 1980 | 208 | 117.088890 | 85.825607 | -24.630604 | -14.6 | 4.2 |
| 26 | APR | 1980 | 300 | 117.125000 | 85.821564 | -24.615276 | -14.0 | 3.8 |
| 26 | APR | 1980 | 354 | 117.162498 | 85.817604 | -24.600946 | -13.1 | 3.3 |
| 26 | APR | 1980 | 400 | 117.186664 | 85.817184 | -24.599518 | -12.9 | 3.2 |
| 26 | APR | 1980 | 440 | 117.194450 | 85.814461 | -24.591438 | -12.2 | 2.2 |
| 26 | APR | 1980 | 500 | 117.208336 | 85.813148 | -24.588696 | -12.0 | 1.5 |
| 26 | APR | 1980 | 540 | 117.236115 | 85.810600 | -24.585789 | -11.6 | 0.6 |
| 26 | APR | 1980 | 600 | 117.250000 | 85.809357 | -24.585133 | -11.4 | 0.4 |
| 26 | APR | 1980 | 628 | 117.269440 | 85.807663 | -24.584318 | -11.0 | 0.6 |
| 26 | APR | 1980 | 700 | 117.291664 | 85.805840 | -24.581646 | -10.0 | 2.0 |
| 26 | APR | 1980 | 726 | 117.309723 | 85.804497 | -24.576134 | -9.1 | 3.8 |
| 26 | APR | 1980 | 800 | 117.333336 | 85.802902 | -24.563694 | -8.4 | 5.8 |
| 26 | APR | 1980 | 815 | 117.343750 | 85.802223 | -24.556924 | -8.4 | 6.3 |
| 26 | APR | 1980 | 900 | 117.375000 | 85.800140 | -24.534575 | -9.0 | 6.8 |
| 26 | APR | 1980 | 1000 | 117.416664 | 85.796997 | -24.504042 | -10.2 | 7.2 |
| 26 | APR | 1980 | 1056 | 117.455559 | 85.793938 | -24.473385 | -9.6 | 7.4 |
| 26 | APR | 1980 | 1100 | 117.458336 | 85.793732 | -24.471218 | -9.5 | 7.3 |
| 26 | APR | 1980 | 1149 | 117.492363 | 85.791420 | -24.447876 | -7.8 | 5.0 |
| 26 | APR | 1980 | 1200 | 117.500000 | 85.790970 | -24.444145 | -7.4 | 4.2 |
| 26 | APR | 1980 | 1242 | 117.529167 | 85.789444 | -24.434586 | -6.2 | 2.6 |
| 26 | APR | 1980 | 1300 | 117.541664 | 85.788857 | -24.431059 | -5.9 | 2.8 |
| 26 | APR | 1980 | 1336 | 117.556673 | 85.787727 | -24.422907 | -5.7 | 3.5 |
| 26 | APR | 1980 | 1400 | 117.583336 | 85.786972 | -24.416321 | -5.9 | 4.0 |
| 26 | APR | 1980 | 1427 | 117.602081 | 85.786087 | -24.407961 | -6.2 | 4.4 |
| 26 | APR | 1980 | 1500 | 117.625000 | 85.784920 | -24.397135 | -6.9 | 4.5 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 26 | APR | 1980 | 1522 | 117.640282 | 85.784073 | -24.390043 | -7.3 | 4.3 |
| 26 | APR | 1980 | 1600 | 117.666664 | 85.782509 | -24.378679 | -7.9 | 3.8 |
| 26 | APR | 1980 | 1612 | 117.674995 | 85.781990 | -24.375399 | -7.9 | 3.6 |
| 26 | APR | 1980 | 1700 | 117.708336 | 85.779984 | -24.363272 | -7.2 | 3.4 |
| 26 | APR | 1980 | 1709 | 117.714577 | 85.779640 | -24.360991 | -6.9 | 3.5 |
| 26 | APR | 1980 | 1757 | 117.747917 | 85.778069 | -24.348602 | -5.3 | 3.4 |
| 26 | APR | 1980 | 1800 | 117.750000 | 85.777977 | -24.347851 | -5.2 | 3.4 |
| 26 | APR | 1980 | 1856 | 117.788887 | 85.776466 | -24.335743 | -5.3 | 2.3 |
| 26 | APR | 1980 | 1900 | 117.791664 | 85.776352 | -24.335081 | -5.4 | 2.2 |
| 26 | APR | 1980 | 1942 | 117.820831 | 85.775055 | -24.328718 | -5.7 | 2.4 |
| 26 | APR | 1980 | 2000 | 117.833336 | 85.774513 | -24.325081 | -5.4 | 3.1 |
| 26 | APR | 1980 | 2100 | 117.875000 | 85.773010 | -24.305748 | -3.8 | 5.5 |
| 26 | APR | 1980 | 2200 | 117.916664 | 85.772011 | -24.280148 | -2.7 | 5.4 |
| 26 | APR | 1980 | 2229 | 117.936806 | 85.771591 | -24.270094 | -2.7 | 4.0 |
| 26 | APR | 1980 | 2300 | 117.958336 | 85.771126 | -24.262720 | -2.8 | 2.4 |
| 27 | APR | 1980 | 0 | 118.000000 | 85.770256 | -24.256952 | -2.4 | 0.6 |
| 27 | APR | 1980 | 100 | 118.041664 | 85.769638 | -24.254223 | -1.5 | 1.0 |
| 27 | APR | 1980 | 100 | 118.041664 | 85.769638 | -24.254223 | -1.5 | 1.0 |
| 27 | APR | 1980 | 200 | 118.083336 | 85.769218 | -24.248131 | -1.4 | 1.6 |
| 27 | APR | 1980 | 204 | 118.086113 | 85.769188 | -24.247675 | -1.4 | 1.6 |
| 27 | APR | 1980 | 246 | 118.115273 | 85.768822 | -24.243223 | -1.7 | 1.3 |
| 27 | APR | 1980 | 300 | 118.125000 | 85.768700 | -24.241985 | -1.6 | 1.1 |
| 27 | APR | 1980 | 351 | 118.160423 | 85.768265 | -24.238560 | -1.5 | 0.8 |
| 27 | APR | 1980 | 400 | 118.166664 | 85.768196 | -24.238064 | -1.4 | 0.7 |
| 27 | APR | 1980 | 432 | 118.188896 | 85.767960 | -24.236345 | -1.3 | 0.8 |
| 27 | APR | 1980 | 500 | 118.208336 | 85.767784 | -24.234632 | -1.0 | 0.9 |
| 27 | APR | 1980 | 539 | 118.235413 | 85.767609 | -24.231937 | -0.7 | 0.9 |
| 27 | APR | 1980 | 600 | 118.250000 | 85.767540 | -24.230503 | -0.5 | 0.9 |
| 27 | APR | 1980 | 618 | 118.262505 | 85.767494 | -24.229305 | -0.4 | 0.9 |
| 27 | APR | 1980 | 700 | 118.291664 | 85.767403 | -24.226286 | -0.4 | 1.1 |
| 27 | APR | 1980 | 726 | 118.309723 | 85.767342 | -24.223818 | -0.5 | 1.5 |
| 27 | APR | 1980 | 800 | 118.333336 | 85.767250 | -24.219555 | -0.5 | 2.0 |
| 27 | APR | 1980 | 900 | 118.375000 | 85.767136 | -24.209650 | -0.2 | 2.4 |
| 27 | APR | 1980 | 1000 | 118.416664 | 85.767136 | -24.200012 | 0.2 | 1.8 |
| 27 | APR | 1980 | 1100 | 118.458336 | 85.767281 | -24.195013 | 0.6 | 0.4 |
| 27 | APR | 1980 | 1135 | 118.482635 | 85.767387 | -24.194925 | 0.6 | -0.3 |
| 27 | APR | 1980 | 1200 | 118.500000 | 85.767464 | -24.195890 | 0.5 | -0.7 |
| 27 | APR | 1980 | 1300 | 118.541664 | 85.767548 | -24.199106 | -0.1 | -0.5 |
| 27 | APR | 1980 | 1320 | 118.555550 | 85.767525 | -24.199482 | -0.4 | -0.1 |
| 27 | APR | 1980 | 1400 | 118.583336 | 85.767403 | -24.199083 | -0.6 | 0.2 |
| 27 | APR | 1980 | 1434 | 118.606941 | 85.767303 | -24.199219 | -0.4 | -0.4 |
| 27 | APR | 1980 | 1500 | 118.625000 | 85.767265 | -24.200697 | -0.1 | -1.2 |
| 27 | APR | 1980 | 1600 | 118.666664 | 85.767372 | -24.209221 | 0.7 | -2.5 |
| 27 | APR | 1980 | 1621 | 118.681252 | 85.767471 | -24.213181 | 0.9 | -2.5 |
| 27 | APR | 1980 | 1650 | 118.701385 | 85.767624 | -24.218691 | 1.0 | -2.5 |
| 27 | APR | 1980 | 1700 | 118.708336 | 85.767677 | -24.220449 | 1.0 | -2.3 |
| 27 | APR | 1980 | 1800 | 118.750000 | 85.767960 | -24.228364 | 0.6 | -1.2 |
| 27 | APR | 1980 | 1835 | 118.774300 | 85.768044 | -24.230330 | 0.3 | -0.5 |
| 27 | APR | 1980 | 1900 | 118.791664 | 85.768066 | -24.230831 | 0.1 | -0.1 |
| 27 | APR | 1980 | 2000 | 118.833336 | 85.768059 | -24.230135 | -0.1 | 0.3 |
| 27 | APR | 1980 | 2100 | 118.875000 | 85.768013 | -24.229271 | -0.1 | 0.1 |
| 27 | APR | 1980 | 2200 | 118.916664 | 85.768005 | -24.229956 | 0.1 | -0.4 |
| 27 | APR | 1980 | 2300 | 118.958336 | 85.768074 | -24.232498 | 0.3 | -0.8 |
| 28 | APR | 1980 | 0 | 119.000000 | 85.768211 | -24.236280 | 0.5 | -0.9 |
| 28 | APR | 1980 | 100 | 119.041664 | 85.768417 | -24.240271 | 0.7 | -0.4 |
| 28 | APR | 1980 | 200 | 119.083336 | 85.768646 | -24.243500 | 0.7 | -0.6 |
| 28 | APR | 1980 | 300 | 119.125000 | 85.768867 | -24.245586 | 0.6 | -0.4 |
| 28 | APR | 1980 | 363 | 119.127063 | 85.768875 | -24.245668 | 0.6 | -0.4 |
| 28 | APR | 1980 | 400 | 119.166664 | 85.769043 | -24.247103 | 0.4 | -0.4 |
| 28 | APR | 1980 | 500 | 119.208336 | 85.769142 | -24.249443 | 0.2 | -0.7 |
| 28 | APR | 1980 | 600 | 119.250000 | 85.769211 | -24.253378 | 0.3 | -1.0 |
| 28 | APR | 1980 | 638 | 119.276390 | 85.769287 | -24.256069 | 0.5 | -0.9 |
| 28 | APR | 1980 | 700 | 119.291664 | 85.769371 | -24.257324 | 0.8 | -0.7 |
| 28 | APR | 1980 | 800 | 119.333336 | 85.769745 | -24.257877 | 1.6 | 0.5 |
| 28 | APR | 1980 | 825 | 119.350700 | 85.769974 | -24.258161 | 1.8 | 1.3 |
| 28 | APR | 1980 | 836 | 119.353337 | 85.770088 | -24.255039 | 1.9 | 1.5 |
| 28 | APR | 1980 | 900 | 119.375000 | 85.770332 | -24.251966 | 1.9 | 1.9 |
| 28 | APR | 1980 | 1000 | 119.416664 | 85.770798 | -24.242992 | 0.8 | 1.8 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|-------------|-----------|------------|--------|--------|
| 28 | APR | 1980 | 1100 | 119.4583336 | 85.770782 | -24.237299 | -0.8 | 0.7 |
| 28 | APR | 1980 | 1159 | 119.499306 | 85.770409 | -24.235949 | -1.2 | 0.1 |
| 28 | APR | 1980 | 1200 | 119.500000 | 85.770401 | -24.235943 | -1.2 | 0.1 |
| 28 | APR | 1980 | 1212 | 119.5083331 | 85.770332 | -24.235909 | -1.0 | 0.0 |
| 28 | APR | 1980 | 1300 | 119.5416664 | 85.770180 | -24.235840 | 0.0 | 0.1 |
| 28 | APR | 1980 | 1400 | 119.5833336 | 85.770386 | -24.235683 | 1.2 | -0.1 |
| 28 | APR | 1980 | 1500 | 119.6250000 | 85.770874 | -24.237551 | 1.6 | -0.9 |
| 28 | APR | 1980 | 1545 | 119.656250 | 85.771286 | -24.241619 | 1.8 | -1.6 |
| 28 | APR | 1980 | 1600 | 119.6666664 | 85.771439 | -24.243446 | 1.9 | -1.8 |
| 28 | APR | 1980 | 1700 | 119.7083336 | 85.772285 | -24.251366 | 3.8 | -1.5 |
| 28 | APR | 1980 | 1719 | 119.721527 | 85.772720 | -24.253250 | 4.8 | -1.2 |
| 28 | APR | 1980 | 1800 | 119.7500000 | 85.774048 | -24.255644 | 7.1 | -0.5 |
| 28 | APR | 1980 | 1900 | 119.7916664 | 85.776817 | -24.257578 | 9.6 | -0.8 |
| 28 | APR | 1980 | 2000 | 119.8333336 | 85.780052 | -24.265783 | 9.9 | -3.2 |
| 28 | APR | 1980 | 2100 | 119.8750000 | 85.783043 | -24.286901 | 8.3 | -6.2 |
| 28 | APR | 1980 | 2106 | 119.879173 | 85.783310 | -24.289680 | 8.1 | -6.4 |
| 28 | APR | 1980 | 2200 | 119.9166664 | 85.785469 | -24.316965 | 6.9 | -6.7 |
| 28 | APR | 1980 | 2236 | 119.941673 | 85.786789 | -24.332909 | 6.7 | -5.2 |
| 28 | APR | 1980 | 2300 | 119.9583336 | 85.787666 | -24.340841 | 6.9 | -3.8 |
| 29 | APR | 1980 | 0 | 120.0000000 | 85.790039 | -24.350870 | 7.9 | -1.0 |
| 29 | APR | 1980 | 39 | 120.027077 | 85.791809 | -24.352293 | 8.9 | -0.1 |
| 29 | APR | 1980 | 100 | 120.0416664 | 85.792854 | -24.352295 | 9.5 | 0.1 |
| 29 | APR | 1980 | 200 | 120.0833336 | 85.796196 | -24.352057 | 11.0 | -0.3 |
| 29 | APR | 1980 | 300 | 120.1250000 | 85.799965 | -24.356081 | 12.1 | -1.7 |
| 29 | APR | 1980 | 400 | 120.1666664 | 85.804001 | -24.366896 | 12.6 | -3.2 |
| 29 | APR | 1980 | 500 | 120.2083336 | 85.808052 | -24.383600 | 12.3 | -4.2 |
| 29 | APR | 1980 | 600 | 120.2500000 | 85.811905 | -24.403200 | 11.3 | -4.5 |
| 29 | APR | 1980 | 700 | 120.2916664 | 85.815353 | -24.421957 | 9.9 | -3.9 |
| 29 | APR | 1980 | 731 | 120.313194 | 85.816956 | -24.430227 | 9.1 | -3.3 |
| 29 | APR | 1980 | 800 | 120.3333336 | 85.818329 | -24.436813 | 8.4 | -2.8 |
| 29 | APR | 1980 | 900 | 120.3750000 | 85.820847 | -24.446856 | 7.2 | -1.8 |
| 29 | APR | 1980 | 1000 | 120.4166664 | 85.823112 | -24.452917 | 6.8 | -1.1 |
| 29 | APR | 1980 | 1100 | 120.4583336 | 85.825363 | -24.457121 | 7.2 | -0.9 |
| 29 | APR | 1980 | 1121 | 120.472923 | 85.826202 | -24.458649 | 7.5 | -1.0 |
| 29 | APR | 1980 | 1200 | 120.5000000 | 85.827866 | -24.461945 | 8.2 | -1.3 |
| 29 | APR | 1980 | 1250 | 120.534721 | 85.830185 | -24.467323 | 8.8 | -1.6 |
| 29 | APR | 1980 | 1300 | 120.5416664 | 85.830666 | -24.468523 | 8.9 | -1.6 |
| 29 | APR | 1980 | 1308 | 120.547216 | 85.831047 | -24.469505 | 8.9 | -1.7 |
| 29 | APR | 1980 | 1400 | 120.5833336 | 85.833519 | -24.476116 | 8.5 | -1.7 |
| 29 | APR | 1980 | 1456 | 120.622223 | 85.835884 | -24.483271 | 7.1 | -1.8 |
| 29 | APR | 1980 | 1500 | 120.6250000 | 85.836044 | -24.483812 | 7.0 | -1.8 |
| 29 | APR | 1980 | 1600 | 120.6666664 | 85.838127 | -24.493458 | 5.9 | -2.6 |
| 29 | APR | 1980 | 1625 | 120.684029 | 85.838905 | -24.498873 | 5.7 | -3.2 |
| 29 | APR | 1980 | 1700 | 120.7083336 | 85.839966 | -24.508108 | 5.5 | -3.9 |
| 29 | APR | 1980 | 1800 | 120.7500000 | 85.841766 | -24.526865 | 5.7 | -4.3 |
| 29 | APR | 1980 | 1900 | 120.7916664 | 85.843735 | -24.543848 | 6.5 | -3.1 |
| 29 | APR | 1980 | 2000 | 120.8333336 | 85.845970 | -24.552654 | 7.3 | -0.8 |
| 29 | APR | 1980 | 2100 | 120.8750000 | 85.848404 | -24.551420 | 7.6 | 1.1 |
| 29 | APR | 1980 | 2144 | 120.905556 | 85.850166 | -24.547647 | 7.2 | 1.0 |
| 29 | APR | 1980 | 2200 | 120.9166664 | 85.850777 | -24.546738 | 6.9 | 0.6 |
| 29 | APR | 1980 | 2203 | 120.918755 | 85.850883 | -24.546625 | 6.8 | 0.5 |
| 29 | APR | 1980 | 2300 | 120.9583336 | 85.852814 | -24.549580 | 5.7 | -2.2 |
| 31 | MAY | 1980 | 0 | 121.0000000 | 85.854515 | -24.566454 | 5.0 | -5.0 |
| 31 | MAY | 1980 | 100 | 121.0416664 | 85.856224 | -24.590576 | 5.8 | -5.2 |
| 31 | MAY | 1980 | 136 | 121.066673 | 85.857437 | -24.603008 | 6.7 | -4.0 |
| 31 | MAY | 1980 | 200 | 121.0833336 | 85.858360 | -24.609238 | 7.4 | -3.0 |
| 31 | MAY | 1980 | 300 | 121.1250000 | 85.860970 | -24.617195 | 8.5 | -0.7 |
| 31 | MAY | 1980 | 400 | 121.1666664 | 85.863693 | -24.617535 | 8.0 | 0.2 |
| 31 | MAY | 1980 | 451 | 121.202087 | 85.865738 | -24.617638 | 6.7 | -0.5 |
| 31 | MAY | 1980 | 500 | 121.2083336 | 85.866058 | -24.618029 | 6.4 | -0.7 |
| 31 | MAY | 1980 | 600 | 121.2500000 | 85.867874 | -24.625099 | 4.9 | -2.6 |
| 31 | MAY | 1980 | 657 | 121.234581 | 85.869278 | -24.640106 | 4.4 | -4.4 |
| 31 | MAY | 1980 | 700 | 121.2916664 | 85.869354 | -24.641098 | 4.4 | -4.4 |
| 31 | MAY | 1980 | 800 | 121.3333336 | 85.870819 | -24.663483 | 4.7 | -5.2 |
| 31 | MAY | 1980 | 844 | 121.363892 | 85.872002 | -24.680292 | 5.2 | -4.9 |
| 31 | MAY | 1980 | 960 | 121.3750000 | 85.872467 | -24.685993 | 5.4 | -4.6 |
| 31 | MAY | 1980 | 1000 | 121.4166664 | 85.874298 | -24.704805 | 5.8 | -3.7 |
| 31 | MAY | 1980 | 1032 | 121.436896 | 85.875313 | -24.713318 | 5.8 | -3.4 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 31 | MAY | 1980 | 1100 | 121.458336 | 85.876183 | -24.720196 | 5.7 | -3.2 |
| 31 | MAY | 1980 | 1159 | 121.499306 | 85.877853 | -24.734491 | 4.7 | -3.4 |
| 31 | MAY | 1980 | 1200 | 121.500000 | 85.877876 | -24.734747 | 4.6 | -3.4 |
| 31 | MAY | 1980 | 1219 | 121.513191 | 85.878334 | -24.739687 | 4.2 | -3.5 |
| 31 | MAY | 1980 | 1300 | 121.541664 | 85.879166 | -24.750759 | 3.4 | -3.6 |
| 31 | MAY | 1980 | 1400 | 121.583336 | 85.880142 | -24.765781 | 2.8 | -3.1 |
| 31 | MAY | 1980 | 1406 | 121.587502 | 85.880234 | -24.767153 | 2.8 | -3.0 |
| 31 | MAY | 1980 | 1500 | 121.625000 | 85.881073 | -24.780106 | 3.0 | -3.8 |
| 31 | MAY | 1980 | 1533 | 121.647919 | 85.881615 | -24.791239 | 3.0 | -5.2 |
| 31 | MAY | 1980 | 1554 | 121.662498 | 85.881958 | -24.800102 | 2.9 | -6.0 |
| 31 | MAY | 1980 | 1600 | 121.666664 | 85.882050 | -24.802874 | 2.9 | -6.2 |
| 31 | MAY | 1980 | 1658 | 121.706940 | 85.882935 | -24.833502 | 2.9 | -7.5 |
| 31 | MAY | 1980 | 1700 | 121.708336 | 85.882965 | -24.834637 | 2.9 | -7.5 |
| 31 | MAY | 1980 | 1719 | 121.721527 | 85.883278 | -24.845490 | 3.1 | -7.6 |
| 31 | MAY | 1980 | 1800 | 121.750000 | 85.883995 | -24.868532 | 3.3 | -7.0 |
| 31 | MAY | 1980 | 1843 | 121.779854 | 85.884789 | -24.888391 | 3.5 | -5.1 |
| 31 | MAY | 1980 | 1900 | 121.791664 | 85.885117 | -24.894438 | 3.6 | -4.3 |
| 31 | MAY | 1980 | 1906 | 121.795837 | 85.885231 | -24.896336 | 3.6 | -4.1 |
| 31 | MAY | 1980 | 2000 | 121.833336 | 85.886353 | -24.909657 | 4.1 | -2.9 |
| 31 | MAY | 1980 | 2100 | 121.875000 | 85.887810 | -24.922871 | 4.8 | -3.1 |
| 31 | MAY | 1980 | 2114 | 121.884727 | 85.888176 | -24.926210 | 4.8 | -3.2 |
| 31 | MAY | 1980 | 2200 | 121.916664 | 85.889359 | -24.939257 | 4.5 | -4.5 |
| 31 | MAY | 1980 | 2214 | 121.926392 | 85.889687 | -24.944401 | 4.2 | -5.2 |
| 31 | MAY | 1980 | 2300 | 121.958336 | 85.890602 | -24.965675 | 3.2 | -6.9 |
| 1 | MAY | 1980 | 0 | 122.000000 | 85.891624 | -24.997705 | 3.6 | -6.6 |
| 1 | MAY | 1980 | 0 | 122.000000 | 85.891624 | -24.997705 | 3.6 | -6.6 |
| 1 | MAY | 1980 | 47 | 122.032646 | 85.892776 | -25.017803 | 5.7 | -4.8 |
| 1 | MAY | 1980 | 100 | 122.041664 | 85.893204 | -25.022224 | 6.4 | -4.3 |
| 1 | MAY | 1980 | 146 | 122.073608 | 85.894989 | -25.035172 | 7.4 | -3.5 |
| 1 | MAY | 1980 | 200 | 122.083336 | 85.895538 | -25.038893 | 7.2 | -3.5 |
| 1 | MAY | 1980 | 300 | 122.125000 | 85.897652 | -25.055780 | 5.7 | -3.9 |
| 1 | MAY | 1980 | 332 | 122.147224 | 85.898544 | -25.065544 | 4.6 | -4.1 |
| 1 | MAY | 1980 | 400 | 122.166664 | 85.899185 | -25.074303 | 3.9 | -4.2 |
| 1 | MAY | 1980 | 500 | 122.208336 | 85.900284 | -25.092829 | 3.0 | -3.9 |
| 1 | MAY | 1980 | 518 | 122.220833 | 85.900574 | -25.098087 | 2.9 | -3.8 |
| 1 | MAY | 1980 | 600 | 122.250000 | 85.901222 | -25.109459 | 2.8 | -3.3 |
| 1 | MAY | 1980 | 700 | 122.291664 | 85.902092 | -25.122215 | 2.6 | -2.2 |
| 1 | MAY | 1980 | 704 | 122.294441 | 85.902145 | -25.122854 | 2.5 | -2.1 |
| 1 | MAY | 1980 | 800 | 122.333336 | 85.902847 | -25.128511 | 2.0 | -0.6 |
| 1 | MAY | 1980 | 900 | 122.375000 | 85.903356 | -25.127918 | 1.2 | 0.7 |
| 1 | MAY | 1980 | 922 | 122.390282 | 85.903488 | -25.126596 | 1.0 | 0.9 |
| 1 | MAY | 1980 | 942 | 122.404167 | 85.903580 | -25.125141 | 0.8 | 1.0 |
| 1 | MAY | 1980 | 1000 | 122.416664 | 85.903656 | -25.123777 | 0.7 | 1.0 |
| 1 | MAY | 1980 | 1035 | 122.440971 | 85.903778 | -25.121712 | 0.6 | 0.4 |
| 1 | MAY | 1980 | 1100 | 122.458336 | 85.903854 | -25.121523 | 0.5 | -0.3 |
| 1 | MAY | 1980 | 1200 | 122.500000 | 85.903984 | -25.125542 | 0.2 | -1.2 |
| 1 | MAY | 1980 | 1220 | 122.513885 | 85.903992 | -25.127310 | 0.0 | -1.1 |
| 1 | MAY | 1980 | 1300 | 122.541664 | 85.903931 | -25.129761 | -0.7 | -0.3 |
| 1 | MAY | 1980 | 1317 | 122.553474 | 85.903839 | -25.129831 | -1.2 | 0.2 |
| 1 | MAY | 1980 | 1400 | 122.583336 | 85.903442 | -25.127716 | -2.2 | 0.8 |
| 1 | MAY | 1980 | 1405 | 122.586800 | 85.903381 | -25.127413 | -2.3 | 0.8 |
| 1 | MAY | 1980 | 1441 | 122.611609 | 85.902901 | -25.125511 | -2.6 | 0.6 |
| 1 | MAY | 1980 | 1500 | 122.625000 | 85.902634 | -25.124640 | -2.5 | 0.6 |
| 1 | MAY | 1980 | 1504 | 122.627777 | 85.902580 | -25.124449 | -2.5 | 0.7 |
| 1 | MAY | 1980 | 1520 | 122.638885 | 85.902374 | -25.123571 | -2.4 | 0.8 |
| 1 | MAY | 1980 | 1600 | 122.666664 | 85.901855 | -25.120481 | -2.4 | 1.2 |
| 1 | MAY | 1980 | 1626 | 122.686104 | 85.901466 | -25.117647 | -2.7 | 1.4 |
| 1 | MAY | 1980 | 1700 | 122.708336 | 85.900932 | -25.114185 | -3.4 | 1.4 |
| 1 | MAY | 1980 | 1736 | 122.733337 | 85.900162 | -25.110401 | -4.5 | 1.4 |
| 1 | MAY | 1980 | 1800 | 122.750000 | 85.899521 | -25.107903 | -5.3 | 1.4 |
| 1 | MAY | 1980 | 1814 | 122.759727 | 85.899109 | -25.106400 | -5.7 | 1.4 |
| 1 | MAY | 1980 | 1900 | 122.791664 | 85.897575 | -25.100821 | -6.6 | 1.8 |
| 1 | MAY | 1980 | 2000 | 122.833336 | 85.895279 | -25.090740 | -7.5 | 2.6 |
| 1 | MAY | 1980 | 2000 | 122.833336 | 85.895279 | -25.090740 | -7.5 | 2.6 |
| 1 | MAY | 1980 | 2100 | 122.875000 | 85.892776 | -25.079254 | -7.7 | 2.2 |
| 1 | MAY | 1980 | 2200 | 122.916664 | 85.890373 | -25.073137 | -7.0 | 0.4 |
| 1 | MAY | 1980 | 2212 | 122.924995 | 85.889923 | -25.072973 | -6.8 | 0.0 |
| 1 | MAY | 1980 | 2252 | 122.952782 | 85.888496 | -25.074701 | -6.5 | -1.0 |

FRAM 2 NAVIGATION - KALMAN

| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 1 | MAY | 1980 | 2300 | 122.958336 | 85.888222 | -25.075306 | -6.4 | -1.0 |
| 1 | MAY | 1980 | 2358 | 122.998604 | 85.886314 | -25.080305 | -5.4 | -1.0 |
| 2 | MAY | 1980 | 0 | 123.000000 | 85.886261 | -25.080456 | -5.3 | -1.0 |
| 2 | MAY | 1980 | 38 | 123.026390 | 85.885277 | -25.082788 | -4.3 | -0.7 |
| 2 | MAY | 1980 | 100 | 123.041664 | 85.884781 | -25.083773 | -4.0 | -0.5 |
| 2 | MAY | 1980 | 200 | 123.083336 | 85.883537 | -25.086309 | -3.8 | -0.7 |
| 2 | MAY | 1980 | 224 | 123.099998 | 85.883026 | -25.087845 | -4.0 | -1.0 |
| 2 | MAY | 1980 | 300 | 123.125000 | 85.882179 | -25.090933 | -4.8 | -1.3 |
| 2 | MAY | 1980 | 306 | 123.129173 | 85.882019 | -25.091518 | -5.0 | -1.3 |
| 2 | MAY | 1980 | 400 | 123.166664 | 85.880379 | -25.096962 | -6.2 | -1.2 |
| 2 | MAY | 1980 | 410 | 123.173615 | 85.880035 | -25.097828 | -6.4 | -1.1 |
| 2 | MAY | 1980 | 454 | 123.204163 | 85.878410 | -25.099857 | -7.4 | 0.1 |
| 2 | MAY | 1980 | 500 | 123.208336 | 85.878174 | -25.099760 | -7.5 | 0.3 |
| 2 | MAY | 1980 | 556 | 123.247223 | 85.875679 | -25.092171 | -8.9 | 3.5 |
| 2 | MAY | 1980 | 600 | 123.250000 | 85.875481 | -25.091072 | -9.0 | 3.8 |
| 2 | MAY | 1980 | 641 | 123.278473 | 85.873383 | -25.076368 | -10.0 | 5.3 |
| 2 | MAY | 1980 | 700 | 123.291664 | 85.872337 | -25.068792 | -10.4 | 5.3 |
| 2 | MAY | 1980 | 800 | 123.333336 | 85.868774 | -25.046448 | -11.3 | 4.5 |
| 2 | MAY | 1980 | 828 | 123.352776 | 85.867065 | -25.037184 | -11.3 | 4.4 |
| 2 | MAY | 1980 | 900 | 123.375000 | 85.865150 | -25.025824 | -10.8 | 5.3 |
| 2 | MAY | 1980 | 1000 | 123.416664 | 85.861938 | -24.992231 | -8.8 | 10.1 |
| 2 | MAY | 1980 | 1016 | 123.427773 | 85.861214 | -24.979099 | -8.1 | 11.7 |
| 2 | MAY | 1980 | 1040 | 123.444450 | 85.860222 | -24.956434 | -7.2 | 13.2 |
| 2 | MAY | 1980 | 1100 | 123.458336 | 85.859467 | -24.936304 | -6.8 | 13.5 |
| 2 | MAY | 1980 | 1113 | 123.467354 | 85.858994 | -24.923214 | -6.6 | 13.4 |
| 2 | MAY | 1980 | 1200 | 123.500000 | 85.857285 | -24.878660 | -7.2 | 11.7 |
| 2 | MAY | 1980 | 1258 | 123.540276 | 85.854813 | -24.833349 | -8.4 | 9.6 |
| 2 | MAY | 1980 | 1300 | 123.541664 | 85.854721 | -24.831903 | -8.4 | 9.6 |
| 2 | MAY | 1980 | 1349 | 123.575691 | 85.852524 | -24.797848 | -7.7 | 9.0 |
| 2 | MAY | 1980 | 1400 | 123.583336 | 85.852081 | -24.790487 | -7.3 | 8.9 |
| 2 | MAY | 1980 | 1415 | 123.593750 | 85.851517 | -24.780493 | -6.7 | 9.0 |
| 2 | MAY | 1980 | 1443 | 123.613190 | 85.850548 | -24.761196 | -6.2 | 9.6 |
| 2 | MAY | 1980 | 1500 | 123.625000 | 85.849968 | -24.748600 | -6.3 | 10.2 |
| 2 | MAY | 1980 | 1536 | 123.650002 | 85.848694 | -24.719883 | -6.8 | 11.0 |
| 2 | MAY | 1980 | 1600 | 123.666664 | 85.847786 | -24.700129 | -7.2 | 11.1 |
| 2 | MAY | 1980 | 1700 | 123.708336 | 85.845329 | -24.650616 | -7.9 | 11.1 |
| 2 | MAY | 1980 | 1722 | 123.723610 | 85.844383 | -24.632425 | -8.1 | 11.1 |
| 2 | MAY | 1980 | 1800 | 123.750000 | 85.842659 | -24.601160 | -8.9 | 10.9 |
| 2 | MAY | 1980 | 1813 | 123.759026 | 85.842018 | -24.590658 | -9.3 | 10.8 |
| 2 | MAY | 1980 | 1900 | 123.791664 | 85.839516 | -24.553652 | -10.1 | 10.4 |
| 2 | MAY | 1980 | 1908 | 123.797218 | 85.839081 | -24.547464 | -10.1 | 10.4 |
| 2 | MAY | 1980 | 1936 | 123.816673 | 85.837578 | -24.526012 | -9.7 | 10.2 |
| 2 | MAY | 1980 | 2000 | 123.833336 | 85.836357 | -24.507895 | -9.0 | 10.1 |
| 2 | MAY | 1980 | 2054 | 123.870827 | 85.833939 | -24.467573 | -7.8 | 10.1 |
| 2 | MAY | 1980 | 2100 | 123.875000 | 85.833687 | -24.463064 | -7.7 | 10.1 |
| 2 | MAY | 1980 | 2123 | 123.890966 | 85.832741 | -24.445683 | -7.5 | 10.2 |
| 2 | MAY | 1980 | 2200 | 123.916664 | 85.831215 | -24.417713 | -7.8 | 10.0 |
| 2 | MAY | 1980 | 2241 | 123.945137 | 85.829407 | -24.388166 | -8.6 | 9.3 |
| 2 | MAY | 1980 | 2300 | 123.958336 | 85.828506 | -24.375225 | -8.9 | 9.0 |
| 2 | MAY | 1980 | 2309 | 123.964577 | 85.828072 | -24.369240 | -9.0 | 8.9 |
| 2 | MAY | 1980 | 2330 | 123.979164 | 85.827042 | -24.355469 | -9.1 | 8.8 |
| 3 | MAY | 1980 | 0 | 124.000000 | 85.825592 | -24.335934 | -8.7 | 8.8 |
| 3 | MAY | 1980 | 100 | 124.041664 | 85.822968 | -24.296595 | -7.4 | 8.8 |
| 3 | MAY | 1980 | 116 | 124.052773 | 85.822342 | -24.286245 | -7.1 | 8.7 |
| 3 | MAY | 1980 | 200 | 124.083336 | 85.820755 | -24.257908 | -6.3 | 8.8 |
| 3 | MAY | 1980 | 300 | 124.125000 | 85.818817 | -24.217392 | -5.7 | 9.4 |
| 3 | MAY | 1980 | 302 | 124.126396 | 85.818756 | -24.215994 | -5.7 | 9.4 |
| 3 | MAY | 1980 | 400 | 124.166664 | 85.816956 | -24.177628 | -6.0 | 7.8 |
| 3 | MAY | 1980 | 401 | 124.167358 | 85.816925 | -24.177059 | -6.0 | 7.7 |
| 3 | MAY | 1980 | 448 | 124.200005 | 85.815285 | -24.154388 | -7.0 | 5.7 |
| 3 | MAY | 1980 | 500 | 124.208336 | 85.814819 | -24.149471 | -7.3 | 5.4 |
| 3 | MAY | 1980 | 548 | 124.241669 | 85.812813 | -24.130728 | -7.8 | 5.5 |
| 3 | MAY | 1980 | 600 | 124.250000 | 85.812309 | -24.125757 | -7.7 | 5.7 |
| 3 | MAY | 1980 | 634 | 124.273613 | 85.810928 | -24.109768 | -7.4 | 7.1 |
| 3 | MAY | 1980 | 700 | 124.291664 | 85.809898 | -24.094683 | -7.3 | 8.5 |
| 3 | MAY | 1980 | 800 | 124.333336 | 85.807434 | -24.054518 | -8.2 | 8.7 |
| 3 | MAY | 1980 | 803 | 124.335419 | 85.807304 | -24.052603 | -8.3 | 8.6 |
| 3 | MAY | 1980 | 900 | 124.375000 | 85.804649 | -24.018175 | -8.5 | 8.6 |

FRAM 2 NAVIGATION - KALMAN

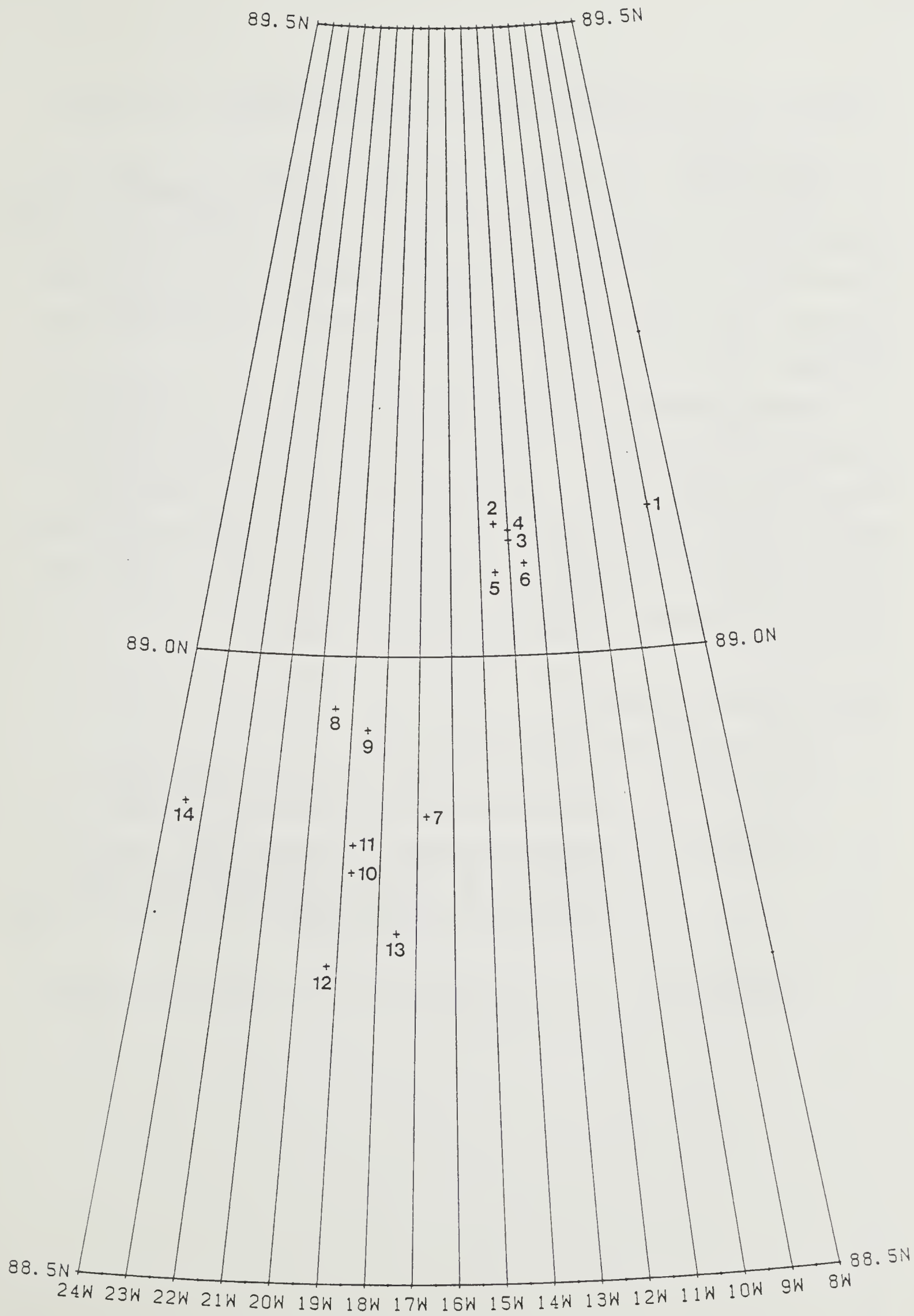
| DY | MON | YEAR | GMT | JULDAY | LATITUDE | LONGITUDE | N-VEL. | E-VEL. |
|----|-----|------|------|------------|-----------|------------|--------|--------|
| 3 | MAY | 1980 | 923 | 124.390968 | 85.803619 | -24.002907 | -8.1 | 9.4 |
| 3 | MAY | 1980 | 950 | 124.409721 | 85.802467 | -23.983841 | -7.8 | 9.5 |
| 3 | MAY | 1980 | 1000 | 124.416664 | 85.802040 | -23.976927 | -7.9 | 9.2 |
| 3 | MAY | 1980 | 1005 | 124.420135 | 85.801826 | -23.973558 | -7.9 | 9.0 |
| 3 | MAY | 1980 | 1100 | 124.458336 | 85.799400 | -23.941574 | -8.6 | 6.5 |
| 3 | MAY | 1980 | 1138 | 124.484718 | 85.797577 | -23.925791 | -9.1 | 5.1 |
| 3 | MAY | 1980 | 1200 | 124.500000 | 85.796494 | -23.917671 | -9.2 | 5.0 |
| 3 | MAY | 1980 | 1300 | 124.541664 | 85.793510 | -23.894999 | -9.2 | 5.5 |
| 3 | MAY | 1980 | 1326 | 124.559723 | 85.792221 | -23.884203 | -9.1 | 5.8 |
| 3 | MAY | 1980 | 1400 | 124.583336 | 85.790550 | -23.869783 | -9.1 | 5.6 |
| 3 | MAY | 1980 | 1444 | 124.613892 | 85.788429 | -23.852264 | -8.6 | 5.4 |
| 3 | MAY | 1980 | 1500 | 124.625000 | 85.787689 | -23.845882 | -8.4 | 5.5 |
| 3 | MAY | 1980 | 1513 | 124.634026 | 85.787109 | -23.840466 | -8.1 | 5.8 |
| 3 | MAY | 1980 | 1600 | 124.666664 | 85.785156 | -23.818724 | -7.3 | 6.6 |
| 3 | MAY | 1980 | 1630 | 124.687500 | 85.784004 | -23.804262 | -7.0 | 6.4 |
| 3 | MAY | 1980 | 1700 | 124.708336 | 85.782890 | -23.791155 | -6.9 | 5.5 |
| 3 | MAY | 1980 | 1800 | 124.750000 | 85.780624 | -23.769587 | -7.2 | 4.7 |
| 3 | MAY | 1980 | 1816 | 124.761108 | 85.779991 | -23.763937 | -7.5 | 4.9 |
| 3 | MAY | 1980 | 1900 | 124.791664 | 85.778137 | -23.747158 | -8.1 | 5.5 |
| 3 | MAY | 1980 | 2000 | 124.833336 | 85.775467 | -23.721569 | -8.0 | 5.9 |
| 3 | MAY | 1980 | 2002 | 124.834724 | 85.775383 | -23.720703 | -8.0 | 5.9 |
| 3 | MAY | 1990 | 2034 | 124.856941 | 85.774055 | -23.707052 | -7.2 | 5.7 |
| 3 | MAY | 1980 | 2100 | 124.875000 | 85.773109 | -23.696215 | -6.3 | 5.6 |
| 3 | MAY | 1980 | 2149 | 124.909027 | 85.771584 | -23.675009 | -5.4 | 6.5 |
| 3 | MAY | 1980 | 2200 | 124.916664 | 85.771271 | -23.669655 | -5.3 | 6.8 |
| 3 | MAY | 1980 | 2220 | 124.930550 | 85.770706 | -23.659061 | -5.2 | 7.6 |
| 3 | MAY | 1980 | 2300 | 124.958336 | 85.769608 | -23.634657 | -4.9 | 8.9 |
| 3 | MAY | 1980 | 2335 | 124.982635 | 85.768692 | -23.611538 | -4.8 | 9.0 |
| 4 | MAY | 1980 | 0 | 125.000000 | 85.768059 | -23.595531 | -4.6 | 8.5 |
| 4 | MAY | 1980 | 100 | 125.041664 | 85.766571 | -23.562328 | -4.5 | 6.5 |
| 4 | MAY | 1980 | 200 | 125.083336 | 85.765083 | -23.537607 | -4.7 | 5.0 |
| 4 | MAY | 1980 | 300 | 125.125000 | 85.763527 | -23.516035 | -4.9 | 5.1 |
| 4 | MAY | 1980 | 309 | 125.131248 | 85.763283 | -23.512669 | -5.0 | 5.2 |
| 4 | MAY | 1980 | 400 | 125.166664 | 85.761894 | -23.492487 | -5.1 | 5.5 |
| 4 | MAY | 1980 | 456 | 125.205559 | 85.760384 | -23.470226 | -4.9 | 5.2 |
| 4 | MAY | 1980 | 500 | 125.208336 | 85.760277 | -23.468721 | -4.9 | 5.1 |
| 4 | MAY | 1980 | 600 | 125.250000 | 85.758743 | -23.447830 | -4.6 | 4.5 |
| 4 | MAY | 1980 | 644 | 125.280556 | 85.757675 | -23.433359 | -4.4 | 4.5 |
| 4 | MAY | 1980 | 700 | 125.291664 | 85.757294 | -23.428045 | -4.4 | 4.6 |
| 4 | MAY | 1980 | 800 | 125.333336 | 85.755852 | -23.408176 | -4.6 | 4.4 |
| 4 | MAY | 1980 | 831 | 125.354858 | 85.755058 | -23.398718 | -4.8 | 4.0 |
| 4 | MAY | 1980 | 900 | 125.375000 | 85.754288 | -23.390795 | -5.1 | 3.5 |
| 4 | MAY | 1980 | 1000 | 125.416664 | 85.752533 | -23.377987 | -5.7 | 2.3 |
| 4 | MAY | 1980 | 1018 | 125.429169 | 85.751968 | -23.375229 | -5.9 | 1.9 |

POSITIONS OF THE DRIFTING STATION CAMP I
AS DETERMINED BY CELESTIAL NAVIGATION

| <u>Fix Number</u> | | <u>Date</u> | | <u>GMT</u> | <u>Latitude</u> | <u>Longitude*</u> |
|-----------------------|------|-------------|------|------------|-----------------|-------------------|
| 1 | Apr. | 8 | 1980 | 1916 | 89.113 | -9.00 |
| 2 | | 9 | 1980 | 1057 | 89.105 | -14.50 |
| 3 | | 10 | 1980 | 1124 | 89.093 | -14.00 |
| 4 | | 11 | 1980 | 1148 | 89.100 | -14.00 |
| 5 | | 14 | 1980 | 1006 | 89.067 | -14.50 |
| 6 | | 15 | 1980 | 1434 | 89.073 | -13.50 |
| 7 | | 20 | 1980 | 2039 | 88.873 | -16.75 |
| 8 | | 21 | 1980 | 1402 | 88.958 | -19.50 |
| 9 | | 22 | 1980 | 1525 | 88.942 | -18.50 |
| 10 | | 23 | 1980 | 2359 | 88.828 | -18.75 |
| 11 | | 25 | 1980 | 1053 | 88.850 | -18.75 |
| 12 | | 28 | 1980 | 1608 | 88.753 | -19.25 |
| 13 | | 30 | 1980 | 2116 | 88.780 | -17.50 |
| 14 | May | 2 | 1980 | 1300 | 88.880 | -23.50 |

The fix number is placed next to the position indicator (+) on the following plot to aid in the interpretation of the Camp I drift track through time.

*negative sign implies west longitude



CAMP I ICE FLOE AZIMUTH, GRID AZIMUTH AND MAGNETIC DECLINATION

During the drift of Camp I, ice floe azimuths and magnetic declinations were taken when weather and time permitted. Markers positioned on the ice flow determined the imaginary line of the camp azimuth. Bearings of the camp azimuth relative to True North were determined using sun shots.

Magnetic declinations were obtained using a K & E surveyors compass placed in between and in line with the markers defining the line of the camp azimuth. The difference between the True North bearing of the camp azimuth and magnetic north reading from the surveyors compass is defined as the magnetic declination. Error estimates for magnetic declination are ± 0.5 degrees.

Key to column headings:

Date and GMT are as previously noted

True Azimuth degrees clockwise from True North with estimated error (also in decimal degrees)

Grid Azimuth degrees clockwise from Grid North. Grid North is defined as any directed line parallel to the 0 degree meridian from Greenwich, England to the North Pole. Grid East is 90 degrees clockwise.

Magnetic
Declination decimal degrees, positive values imply west declinations

CAMP I AZIMUTH AND DECLINATION

| | <u>Date</u> | | <u>GMT</u> | <u>True Azimuth</u> | <u>Grid Azimuth</u> | <u>Magnetic Declination</u> |
|-------|-------------|------|------------|-------------------------|-------------------------|---------------------------------|
| April | 8 | 1980 | 1916 | 17.9 \pm 0.4 | 26.9 | |
| | 9 | | 1057 | 15.9 \pm 0.2 | 27.4 | |
| | 10 | | 1124 | 15.9 \pm 2.6 | 26.9 | |
| | 11 | | 1148 | 13.6 \pm 0.1 | 27.6 | |
| | 14 | | 1006 | 13.5 \pm 0.2 | 28.0 | |
| | 15 | | 1434 | 15.0 \pm 0.5 | 28.5 | 40.5 |
| | 18 | | 1107 | 15.0 | | |
| | 20 | | 2039 | 12.7 \pm 1.0 | 29.5 | 46.0 |
| | 21 | | 1402 | 9.3 \pm 0.1 | 28.8 | 45.0 |
| | 22 | | 1525 | 10.4 \pm 0.3 | 28.9 | 45.0 |
| | 23 | | 2359 | 10.7 \pm 0.1 | 29.5 | 45.0 |
| | 24 | | 1300 | 10.8 \pm 0.5 | 29.5 | |
| | 25 | | 1053 | 11.0 \pm 0.1 | 29.8 | |
| | 26 | | 2207 | 10.3 | 29.3 | |
| | 28 | | 1608 | 9.2 \pm 0.1 | 28.5 | 45.0 |
| | 30 | | 2116 | 9.8 \pm 0.1 | 27.3 | 45.0 |
| May | 2 | | 1300 | 3.0 | 26.5 | 42.0 |

Depth Soundings

As FRAM II drifted, a continuous record of ocean depths was made with an echo sounder operating at a frequency of 12 kHz. The sounder was manufactured by the Edo Western Corp. and consisted of three units: Model D-100 transducer, Model 248E sonar transceiver and Model 550A graphic recorder. The instrument was installed through an open hydrographic well with the transducer suspended at a depth of 2 m below sea level. Depths for this report were scaled at hourly intervals from the chart records on which 19" represented a depth change of 1500 m. The actual physical measurement is two-way reflection time from the transducer to the bottom and return. The uncorrected depth is defined as the one-way reflection time multiplied by the nominal speed of sound in seawater, 1500 m/s. More precise depth determination requires a correction for the sound speed profile in particular geographic areas of the ocean. The corrected depths listed here are based on tables by Matthews (1939).

FRAM II drifted over the lower flanks of the Morris Jessup Plateau, a marginal continental feature north of Greenland. Depths ranged from 4036 m at the commencement of recording to 3650 m at the shallowest.

OCEAN DEPTHS AT FRAM II

Key to column headings:

DY = Day

MON = Month

YEAR = Year

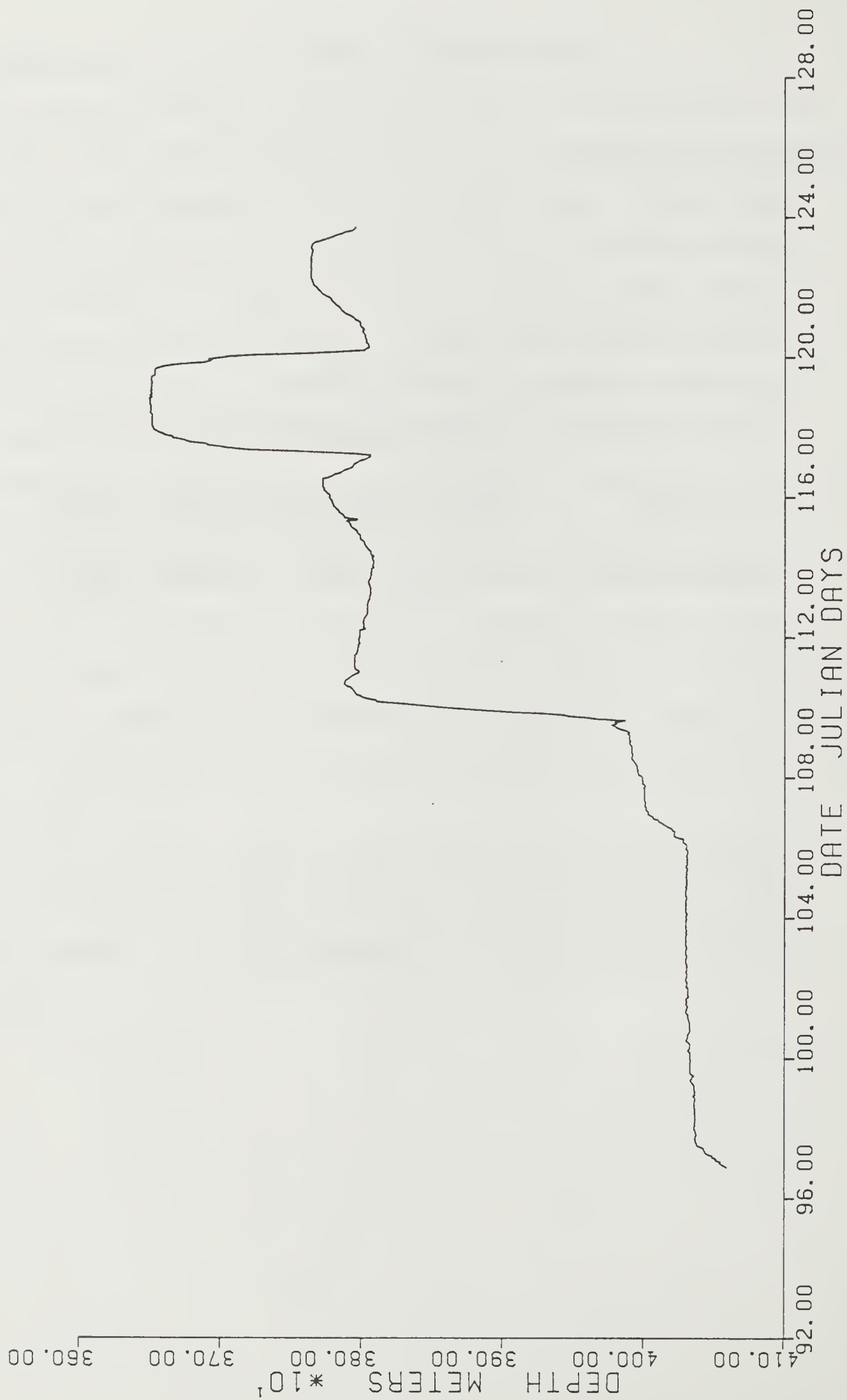
GMT = Greenwich Mean Time

SECONDS = Two-way reflection time

METERS (UNCORR) = Uncorrected depth based on sound
speed of 1500 m s⁻¹

VEL (CORR) = Depth correction for sound speed
in Arctic waters (Matthews, 1939)

METERS (CORR) = Corrected depths = METERS (UNCORR)
+ VEL (CORR)



FRA 1 2 DEPTH DATA

| DAY | MON | YEAR | GAT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CORR) |
|-----|-----|------|------|---------|--------------------|-------------|------------------|
| 5 | APR | 1980 | 2100 | 5.490 | 4117.5 | -58 | 4059.5 |
| 5 | APR | 1980 | 2200 | 5.488 | 4116.0 | -58 | 4058.0 |
| 5 | APR | 1980 | 2300 | 5.485 | 4113.8 | -58 | 4055.8 |
| 6 | APR | 1980 | 0 | 5.483 | 4112.3 | -58 | 4054.3 |
| 6 | APR | 1980 | 100 | 5.484 | 4113.0 | -58 | 4055.0 |
| 6 | APR | 1980 | 200 | 5.479 | 4109.3 | -58 | 4051.3 |
| 6 | APR | 1980 | 300 | 5.480 | 4110.0 | -58 | 4052.0 |
| 6 | APR | 1980 | 400 | 5.476 | 4107.0 | -58 | 4049.0 |
| 6 | APR | 1980 | 500 | 5.476 | 4107.0 | -58 | 4049.0 |
| 6 | APR | 1980 | 600 | 5.472 | 4104.0 | -58 | 4046.0 |
| 6 | APR | 1980 | 700 | 5.470 | 4102.5 | -58 | 4044.2 |
| 6 | APR | 1980 | 800 | 5.469 | 4101.8 | -58 | 4043.8 |
| 6 | APR | 1980 | 900 | 5.468 | 4101.0 | -58 | 4043.0 |
| 6 | APR | 1980 | 1000 | 5.468 | 4101.0 | -58 | 4043.0 |
| 6 | APR | 1980 | 1100 | 5.465 | 4098.8 | -58 | 4040.8 |
| 6 | APR | 1980 | 1200 | 5.462 | 4096.5 | -58 | 4038.5 |
| 6 | APR | 1980 | 1300 | 5.461 | 4095.8 | -58 | 4037.8 |
| 6 | APR | 1980 | 1400 | 5.461 | 4095.8 | -58 | 4037.8 |
| 6 | APR | 1980 | 1500 | 5.460 | 4095.0 | -58 | 4037.0 |
| 6 | APR | 1980 | 1600 | 5.460 | 4095.0 | -58 | 4037.0 |
| 6 | APR | 1980 | 1700 | 5.460 | 4095.0 | -58 | 4037.0 |
| 6 | APR | 1980 | 1800 | 5.460 | 4095.0 | -58 | 4037.0 |
| 6 | APR | 1980 | 1900 | 5.461 | 4095.8 | -58 | 4037.8 |
| 6 | APR | 1980 | 2000 | 5.461 | 4095.8 | -58 | 4037.8 |
| 6 | APR | 1980 | 2100 | 5.460 | 4095.0 | -58 | 4037.0 |
| 6 | APR | 1980 | 2200 | 5.450 | 4095.0 | -58 | 4037.0 |
| 6 | APR | 1980 | 2300 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 0 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 100 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 200 | 5.450 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 300 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 400 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 500 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 600 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 700 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 800 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 900 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 1000 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 1100 | 5.450 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 1200 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 1300 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 1400 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 1500 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 1600 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 1700 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 1800 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 1900 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 2000 | 5.460 | 4095.0 | -58 | 4037.0 |
| 7 | APR | 1980 | 2100 | 5.459 | 4094.3 | -58 | 4036.3 |
| 7 | APR | 1980 | 2200 | 5.459 | 4093.5 | -58 | 4035.5 |
| 7 | APR | 1980 | 2300 | 5.460 | 4095.0 | -58 | 4037.0 |
| 8 | APR | 1980 | 0 | 5.459 | 4094.3 | -58 | 4036.3 |
| 8 | APR | 1980 | 100 | 5.460 | 4095.0 | -58 | 4037.0 |
| 8 | APR | 1980 | 200 | 5.459 | 4094.3 | -58 | 4036.3 |
| 8 | APR | 1980 | 300 | 5.459 | 4094.3 | -58 | 4036.3 |
| 8 | APR | 1980 | 400 | 5.459 | 4094.3 | -58 | 4036.3 |
| 8 | APR | 1980 | 500 | 5.459 | 4094.3 | -58 | 4036.3 |
| 8 | APR | 1980 | 600 | 5.456 | 4093.5 | -58 | 4035.5 |
| 8 | APR | 1980 | 700 | 5.457 | 4092.8 | -58 | 4034.8 |
| 8 | APR | 1980 | 800 | 5.456 | 4092.0 | -58 | 4034.0 |
| 8 | APR | 1980 | 900 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 1000 | 5.457 | 4092.8 | -58 | 4034.8 |
| 8 | APR | 1980 | 1100 | 5.457 | 4092.8 | -58 | 4034.8 |
| 8 | APR | 1980 | 1200 | 5.459 | 4094.3 | -58 | 4036.3 |
| 8 | APR | 1980 | 1300 | 5.456 | 4092.0 | -58 | 4034.0 |
| 8 | APR | 1980 | 1400 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 1500 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 1600 | 5.455 | 4091.3 | -58 | 4033.3 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GAT | SECONDS | METERS (UNCORR) | VEL CURR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 8 | APR | 1980 | 1700 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 1800 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 1900 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 2000 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 2100 | 5.455 | 4091.3 | -58 | 4033.3 |
| 8 | APR | 1980 | 2200 | 5.456 | 4092.0 | -58 | 4034.0 |
| 8 | APR | 1980 | 2300 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 0 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 100 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 200 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 300 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 400 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 500 | 5.452 | 4089.0 | -58 | 4031.8 |
| 9 | APR | 1980 | 600 | 5.454 | 4090.5 | -58 | 4032.5 |
| 9 | APR | 1980 | 700 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 800 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 900 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 1000 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 1100 | 5.453 | 4089.8 | -58 | 4031.8 |
| 9 | APR | 1980 | 1200 | 5.451 | 4088.3 | -58 | 4030.3 |
| 9 | APR | 1980 | 1300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 9 | APR | 1980 | 1400 | 5.453 | 4089.8 | -58 | 4031.8 |
| 9 | APR | 1980 | 1500 | 5.453 | 4089.8 | -58 | 4031.8 |
| 9 | APR | 1980 | 1600 | 5.453 | 4089.8 | -58 | 4031.8 |
| 9 | APR | 1980 | 1700 | 5.454 | 4090.5 | -58 | 4032.5 |
| 9 | APR | 1980 | 1800 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 1900 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 2000 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 2100 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 2200 | 5.455 | 4091.3 | -58 | 4033.3 |
| 9 | APR | 1980 | 2300 | 5.455 | 4091.3 | -58 | 4033.3 |
| 10 | APR | 1980 | 0 | 5.455 | 4091.3 | -58 | 4033.3 |
| 10 | APR | 1980 | 100 | 5.454 | 4090.5 | -58 | 4032.5 |
| 10 | APR | 1980 | 200 | 5.454 | 4090.5 | -58 | 4032.5 |
| 10 | APR | 1980 | 300 | 5.453 | 4089.8 | -58 | 4031.8 |
| 10 | APR | 1980 | 400 | 5.453 | 4089.8 | -58 | 4031.8 |
| 10 | APR | 1980 | 500 | 5.453 | 4089.8 | -58 | 4031.8 |
| 10 | APR | 1980 | 600 | 5.452 | 4089.0 | -58 | 4031.8 |
| 10 | APR | 1980 | 700 | 5.451 | 4088.3 | -58 | 4030.3 |
| 10 | APR | 1980 | 800 | 5.451 | 4088.3 | -58 | 4030.3 |
| 10 | APR | 1980 | 900 | 5.452 | 4089.0 | -58 | 4031.0 |
| 10 | APR | 1980 | 1000 | 5.452 | 4089.0 | -58 | 4031.0 |
| 10 | APR | 1980 | 1100 | 5.453 | 4089.8 | -58 | 4031.8 |
| 10 | APR | 1980 | 1200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 10 | APR | 1980 | 1300 | 5.451 | 4088.3 | -58 | 4030.3 |
| 10 | APR | 1980 | 1400 | 5.452 | 4089.0 | -58 | 4031.0 |
| 10 | APR | 1980 | 1500 | 5.452 | 4089.0 | -58 | 4031.0 |
| 10 | APR | 1980 | 1600 | 5.451 | 4088.3 | -58 | 4030.3 |
| 10 | APR | 1980 | 1700 | 5.452 | 4089.0 | -58 | 4031.0 |
| 10 | APR | 1980 | 1800 | 5.454 | 4090.5 | -58 | 4032.5 |
| 10 | APR | 1980 | 1900 | 5.453 | 4089.8 | -58 | 4031.8 |
| 10 | APR | 1980 | 2000 | 5.453 | 4089.8 | -58 | 4031.8 |
| 10 | APR | 1980 | 2100 | 5.452 | 4089.0 | -58 | 4031.8 |
| 10 | APR | 1980 | 2200 | 5.452 | 4089.0 | -58 | 4031.8 |
| 10 | APR | 1980 | 2300 | 5.452 | 4089.0 | -58 | 4031.8 |
| 11 | APR | 1980 | 0 | 5.452 | 4089.0 | -58 | 4031.8 |
| 11 | APR | 1980 | 100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 400 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 500 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 600 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 700 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 800 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 900 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 1000 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 1100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 1200 | 5.452 | 4089.0 | -58 | 4031.0 |

FRAM 2 DEPTH DATA

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| DY | MON | YEAR | GMT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 11 | APR | 1980 | 1300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 1400 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 1500 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 1600 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 1700 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 1800 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 1900 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 2000 | 5.451 | 4088.3 | -58 | 4030.3 |
| 11 | APR | 1980 | 2100 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 2200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 11 | APR | 1980 | 2300 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 0 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 200 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 12 | APR | 1980 | 400 | 5.452 | 4089.0 | -58 | 4031.0 |
| 12 | APR | 1980 | 500 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 600 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 700 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 800 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 900 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1000 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1200 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 12 | APR | 1980 | 1400 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1500 | 5.452 | 4089.0 | -58 | 4031.0 |
| 12 | APR | 1980 | 1600 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1700 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1800 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 1900 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 2000 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 2100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 2200 | 5.451 | 4088.3 | -58 | 4030.3 |
| 12 | APR | 1980 | 2300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 13 | APR | 1980 | 0 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 13 | APR | 1980 | 300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 13 | APR | 1980 | 400 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 500 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 600 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 700 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 800 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 900 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1000 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1200 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 13 | APR | 1980 | 1400 | 5.452 | 4089.0 | -58 | 4031.0 |
| 13 | APR | 1980 | 1500 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1600 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1700 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1800 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 1900 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 2000 | 5.452 | 4089.0 | -58 | 4031.0 |
| 13 | APR | 1980 | 2100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 13 | APR | 1980 | 2200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 13 | APR | 1980 | 2300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 0 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 100 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 300 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 400 | 5.451 | 4088.3 | -58 | 4030.3 |
| 14 | APR | 1980 | 500 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 600 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 700 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 800 | 5.452 | 4089.0 | -58 | 4031.0 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GAT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 14 | APR | 1980 | 900 | 5.453 | 4089.8 | -58 | 4031.8 |
| 14 | APR | 1980 | 1000 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 1100 | 5.451 | 4088.3 | -58 | 4030.3 |
| 14 | APR | 1980 | 1200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 1300 | 5.453 | 4089.8 | -58 | 4031.8 |
| 14 | APR | 1980 | 1400 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 1500 | 5.453 | 4089.8 | -58 | 4031.8 |
| 14 | APR | 1980 | 1600 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 1700 | 5.453 | 4089.8 | -58 | 4031.8 |
| 14 | APR | 1980 | 1800 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 1900 | 5.452 | 4089.0 | -58 | 4031.0 |
| 14 | APR | 1980 | 2000 | 5.453 | 4089.8 | -58 | 4031.8 |
| 14 | APR | 1980 | 2100 | 5.453 | 4089.8 | -58 | 4031.8 |
| 14 | APR | 1980 | 2200 | 5.453 | 4089.8 | -58 | 4031.8 |
| 14 | APR | 1980 | 2300 | 5.451 | 4088.3 | -58 | 4030.3 |
| 15 | APR | 1980 | 0 | 5.452 | 4089.0 | -58 | 4031.0 |
| 15 | APR | 1980 | 100 | 5.452 | 4089.0 | -58 | 4031.0 |
| 15 | APR | 1980 | 200 | 5.452 | 4089.0 | -58 | 4031.0 |
| 15 | APR | 1980 | 300 | 5.450 | 4087.5 | -58 | 4029.5 |
| 15 | APR | 1980 | 400 | 5.448 | 4086.0 | -58 | 4028.0 |
| 15 | APR | 1980 | 500 | 5.449 | 4086.8 | -58 | 4028.8 |
| 15 | APR | 1980 | 600 | 5.449 | 4086.8 | -58 | 4028.8 |
| 15 | APR | 1980 | 700 | 5.443 | 4082.3 | -58 | 4024.3 |
| 15 | APR | 1980 | 800 | 5.440 | 4080.0 | -58 | 4022.0 |
| 15 | APR | 1980 | 900 | 5.440 | 4080.0 | -58 | 4022.0 |
| 15 | APR | 1980 | 1000 | 5.440 | 4080.0 | -58 | 4022.0 |
| 15 | APR | 1980 | 1100 | 5.441 | 4080.8 | -58 | 4022.8 |
| 15 | APR | 1980 | 1200 | 5.438 | 4078.5 | -58 | 4020.5 |
| 15 | APR | 1980 | 1300 | 5.438 | 4078.5 | -58 | 4020.5 |
| 15 | APR | 1980 | 1400 | 5.435 | 4076.3 | -58 | 4018.3 |
| 15 | APR | 1980 | 1500 | 5.432 | 4074.0 | -58 | 4016.0 |
| 15 | APR | 1980 | 1600 | 5.430 | 4072.5 | -58 | 4014.5 |
| 15 | APR | 1980 | 1700 | 5.428 | 4071.0 | -58 | 4013.0 |
| 15 | APR | 1980 | 1800 | 5.425 | 4068.8 | -58 | 4010.8 |
| 15 | APR | 1980 | 1900 | 5.425 | 4068.8 | -58 | 4010.8 |
| 15 | APR | 1980 | 2000 | 5.420 | 4065.0 | -58 | 4007.0 |
| 15 | APR | 1980 | 2100 | 5.420 | 4065.0 | -58 | 4007.0 |
| 15 | APR | 1980 | 2200 | 5.417 | 4062.8 | -58 | 4004.8 |
| 15 | APR | 1980 | 2300 | 5.415 | 4061.3 | -58 | 4003.3 |
| 16 | APR | 1980 | 0 | 5.415 | 4062.0 | -58 | 4004.0 |
| 16 | APR | 1980 | 100 | 5.415 | 4061.3 | -58 | 4003.3 |
| 16 | APR | 1980 | 200 | 5.413 | 4059.5 | -58 | 4001.5 |
| 16 | APR | 1980 | 300 | 5.414 | 4060.5 | -58 | 4002.5 |
| 16 | APR | 1980 | 400 | 5.413 | 4059.8 | -58 | 4001.8 |
| 16 | APR | 1980 | 500 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 600 | 5.413 | 4059.8 | -58 | 4001.8 |
| 16 | APR | 1980 | 700 | 5.413 | 4059.8 | -58 | 4001.8 |
| 16 | APR | 1980 | 800 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 900 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1000 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1100 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1200 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1300 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1400 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1500 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1600 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 1700 | 5.411 | 4058.3 | -58 | 4000.3 |
| 16 | APR | 1980 | 1800 | 5.413 | 4059.8 | -58 | 4001.8 |
| 16 | APR | 1980 | 1900 | 5.412 | 4059.0 | -58 | 4001.0 |
| 16 | APR | 1980 | 2000 | 5.410 | 4057.5 | -58 | 3999.5 |
| 16 | APR | 1980 | 2100 | 5.411 | 4058.3 | -58 | 4000.3 |
| 16 | APR | 1980 | 2200 | 5.410 | 4057.5 | -58 | 3999.5 |
| 16 | APR | 1980 | 2300 | 5.410 | 4057.5 | -58 | 3999.5 |
| 17 | APR | 1980 | 0 | 5.410 | 4057.5 | -58 | 3999.5 |
| 17 | APR | 1980 | 100 | 5.409 | 4056.8 | -58 | 3998.8 |
| 17 | APR | 1980 | 200 | 5.408 | 4054.5 | -58 | 3996.5 |
| 17 | APR | 1980 | 300 | 5.408 | 4054.5 | -58 | 3996.5 |
| 17 | APR | 1980 | 400 | 5.405 | 4053.8 | -58 | 3995.8 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GMT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 17 | APR | 1980 | 500 | 5.406 | 4054.5 | -58 | 3996.5 |
| 17 | APR | 1980 | 600 | 5.405 | 4053.8 | -58 | 3995.8 |
| 17 | APR | 1980 | 700 | 5.405 | 4053.8 | -58 | 3995.8 |
| 17 | APR | 1980 | 800 | 5.405 | 4053.8 | -58 | 3995.8 |
| 17 | APR | 1980 | 900 | 5.404 | 4053.0 | -58 | 3995.0 |
| 17 | APR | 1980 | 1000 | 5.403 | 4052.3 | -58 | 3994.3 |
| 17 | APR | 1980 | 1100 | 5.402 | 4051.5 | -58 | 3993.5 |
| 17 | APR | 1980 | 1200 | 5.401 | 4050.8 | -58 | 3992.8 |
| 17 | APR | 1980 | 1300 | 5.400 | 4050.0 | -58 | 3992.0 |
| 17 | APR | 1980 | 1400 | 5.400 | 4050.0 | -58 | 3992.0 |
| 17 | APR | 1980 | 1500 | 5.401 | 4050.8 | -58 | 3992.8 |
| 17 | APR | 1980 | 1600 | 5.401 | 4050.8 | -58 | 3992.8 |
| 17 | APR | 1980 | 1700 | 5.400 | 4050.0 | -58 | 3992.0 |
| 17 | APR | 1980 | 1800 | 5.400 | 4050.0 | -58 | 3992.0 |
| 17 | APR | 1980 | 1900 | 5.400 | 4050.0 | -58 | 3992.0 |
| 17 | APR | 1980 | 2000 | 5.400 | 4050.0 | -58 | 3992.0 |
| 17 | APR | 1980 | 2100 | 5.400 | 4050.0 | -58 | 3992.0 |
| 17 | APR | 1980 | 2200 | 5.399 | 4049.3 | -58 | 3991.3 |
| 17 | APR | 1980 | 2300 | 5.398 | 4048.5 | -58 | 3990.5 |
| 18 | APR | 1980 | 0 | 5.398 | 4048.5 | -58 | 3990.5 |
| 18 | APR | 1980 | 100 | 5.399 | 4049.3 | -58 | 3991.3 |
| 18 | APR | 1980 | 200 | 5.398 | 4048.5 | -58 | 3990.5 |
| 18 | APR | 1980 | 300 | 5.398 | 4048.5 | -58 | 3990.5 |
| 18 | APR | 1980 | 400 | 5.398 | 4048.5 | -58 | 3990.5 |
| 18 | APR | 1980 | 500 | 5.398 | 4048.5 | -58 | 3990.5 |
| 18 | APR | 1980 | 600 | 5.398 | 4047.0 | -58 | 3989.0 |
| 18 | APR | 1980 | 700 | 5.398 | 4048.5 | -58 | 3990.5 |
| 18 | APR | 1980 | 800 | 5.395 | 4046.3 | -58 | 3988.3 |
| 18 | APR | 1980 | 900 | 5.389 | 4041.8 | -58 | 3983.8 |
| 18 | APR | 1980 | 1000 | 5.386 | 4039.5 | -58 | 3981.5 |
| 18 | APR | 1980 | 1100 | 5.384 | 4038.0 | -58 | 3980.0 |
| 18 | APR | 1980 | 1200 | 5.381 | 4035.8 | -58 | 3977.8 |
| 18 | APR | 1980 | 1300 | 5.380 | 4039.5 | -58 | 3981.5 |
| 18 | APR | 1980 | 1400 | 5.384 | 4038.0 | -58 | 3980.0 |
| 18 | APR | 1980 | 1500 | 5.384 | 4045.5 | -58 | 3987.5 |
| 18 | APR | 1980 | 1600 | 5.368 | 4020.0 | -58 | 3960.0 |
| 18 | APR | 1980 | 1700 | 5.358 | 4018.5 | -58 | 3960.5 |
| 18 | APR | 1980 | 1800 | 5.340 | 4005.0 | -58 | 3947.0 |
| 18 | APR | 1980 | 1900 | 5.335 | 4001.3 | -58 | 3943.3 |
| 18 | APR | 1980 | 2000 | 5.315 | 3987.0 | -58 | 3929.0 |
| 18 | APR | 1980 | 2100 | 5.288 | 3964.5 | -58 | 3906.5 |
| 18 | APR | 1980 | 2200 | 5.260 | 3945.0 | -58 | 3887.0 |
| 18 | APR | 1980 | 2300 | 5.242 | 3931.5 | -58 | 3872.5 |
| 19 | APR | 1980 | 0 | 5.223 | 3917.3 | -58 | 3858.3 |
| 19 | APR | 1980 | 100 | 5.209 | 3906.8 | -58 | 3847.8 |
| 19 | APR | 1980 | 200 | 5.198 | 3897.0 | -58 | 3838.0 |
| 19 | APR | 1980 | 300 | 5.180 | 3885.0 | -58 | 3826.0 |
| 19 | APR | 1980 | 400 | 5.160 | 3870.0 | -58 | 3811.0 |
| 19 | APR | 1980 | 500 | 5.160 | 3870.0 | -58 | 3811.0 |
| 19 | APR | 1980 | 600 | 5.152 | 3864.0 | -58 | 3805.0 |
| 19 | APR | 1980 | 700 | 5.147 | 3860.3 | -58 | 3801.3 |
| 19 | APR | 1980 | 800 | 5.144 | 3858.0 | -58 | 3800.0 |
| 19 | APR | 1980 | 900 | 5.141 | 3855.8 | -58 | 3796.8 |
| 19 | APR | 1980 | 1000 | 5.140 | 3855.0 | -58 | 3796.0 |
| 19 | APR | 1980 | 1100 | 5.139 | 3854.3 | -58 | 3795.3 |
| 19 | APR | 1980 | 1200 | 5.136 | 3853.5 | -58 | 3794.5 |
| 19 | APR | 1980 | 1300 | 5.137 | 3852.8 | -58 | 3793.8 |
| 19 | APR | 1980 | 1400 | 5.135 | 3851.3 | -58 | 3792.3 |
| 19 | APR | 1980 | 1500 | 5.133 | 3849.8 | -58 | 3789.8 |
| 19 | APR | 1980 | 1600 | 5.131 | 3848.3 | -58 | 3788.3 |
| 19 | APR | 1980 | 1700 | 5.132 | 3849.0 | -58 | 3789.0 |
| 19 | APR | 1980 | 1800 | 5.132 | 3849.0 | -58 | 3789.0 |
| 19 | APR | 1980 | 1900 | 5.133 | 3849.8 | -58 | 3789.8 |
| 19 | APR | 1980 | 2000 | 5.134 | 3850.5 | -58 | 3791.5 |
| 19 | APR | 1980 | 2100 | 5.136 | 3852.0 | -58 | 3793.0 |
| 19 | APR | 1980 | 2200 | 5.138 | 3858.5 | -58 | 3794.5 |
| 19 | APR | 1980 | 2300 | 5.140 | 3855.8 | -58 | 3796.8 |
| 20 | APR | 1980 | 0 | 5.144 | 3858.0 | -58 | 3799.0 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GAT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 20 | APR | 1980 | 100 | 5.144 | 3858.0 | -59 | 3799.0 |
| 20 | APR | 1980 | 200 | 5.141 | 3855.8 | -59 | 3796.8 |
| 20 | APR | 1980 | 300 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 400 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 500 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 600 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 700 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 800 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 900 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 1000 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 1100 | 5.140 | 3855.0 | -59 | 3796.0 |
| 20 | APR | 1980 | 1200 | 5.141 | 3855.8 | -59 | 3796.0 |
| 20 | APR | 1980 | 1300 | 5.142 | 3856.5 | -59 | 3797.5 |
| 20 | APR | 1980 | 1400 | 5.142 | 3856.5 | -59 | 3797.5 |
| 20 | APR | 1980 | 1500 | 5.143 | 3857.3 | -59 | 3798.3 |
| 20 | APR | 1980 | 1600 | 5.143 | 3857.3 | -59 | 3798.3 |
| 20 | APR | 1980 | 1700 | 5.143 | 3857.3 | -59 | 3798.3 |
| 20 | APR | 1980 | 1800 | 5.144 | 3858.0 | -59 | 3799.0 |
| 20 | APR | 1980 | 1900 | 5.143 | 3857.3 | -59 | 3798.3 |
| 20 | APR | 1980 | 2000 | 5.145 | 3858.8 | -59 | 3799.8 |
| 20 | APR | 1980 | 2100 | 5.144 | 3858.0 | -59 | 3799.0 |
| 20 | APR | 1980 | 2200 | 5.144 | 3858.0 | -59 | 3799.0 |
| 20 | APR | 1980 | 2300 | 5.144 | 3858.0 | -59 | 3799.0 |
| 21 | APR | 1980 | 0 | 5.145 | 3858.8 | -59 | 3799.8 |
| 21 | APR | 1980 | 100 | 5.145 | 3858.8 | -59 | 3799.8 |
| 21 | APR | 1980 | 200 | 5.145 | 3858.8 | -59 | 3799.8 |
| 21 | APR | 1980 | 300 | 5.145 | 3858.8 | -59 | 3799.8 |
| 21 | APR | 1980 | 400 | 5.145 | 3858.8 | -59 | 3799.8 |
| 21 | APR | 1980 | 500 | 5.145 | 3858.8 | -59 | 3799.8 |
| 21 | APR | 1980 | 600 | 5.150 | 3862.5 | -59 | 3803.5 |
| 21 | APR | 1980 | 700 | 5.148 | 3861.0 | -59 | 3802.0 |
| 21 | APR | 1980 | 800 | 5.149 | 3861.8 | -59 | 3802.8 |
| 21 | APR | 1980 | 900 | 5.149 | 3861.8 | -59 | 3802.8 |
| 21 | APR | 1980 | 1000 | 5.148 | 3861.0 | -59 | 3802.0 |
| 21 | APR | 1980 | 1100 | 5.148 | 3861.0 | -59 | 3802.0 |
| 21 | APR | 1980 | 1200 | 5.149 | 3861.8 | -59 | 3802.8 |
| 21 | APR | 1980 | 1300 | 5.149 | 3861.8 | -59 | 3802.8 |
| 21 | APR | 1980 | 1400 | 5.150 | 3862.5 | -59 | 3803.5 |
| 21 | APR | 1980 | 1500 | 5.151 | 3863.3 | -59 | 3804.3 |
| 21 | APR | 1980 | 1600 | 5.152 | 3864.0 | -59 | 3805.0 |
| 21 | APR | 1980 | 1700 | 5.152 | 3864.0 | -59 | 3805.0 |
| 21 | APR | 1980 | 1800 | 5.152 | 3864.0 | -59 | 3805.0 |
| 21 | APR | 1980 | 1900 | 5.152 | 3864.0 | -59 | 3805.0 |
| 21 | APR | 1980 | 2000 | 5.152 | 3864.0 | -59 | 3805.0 |
| 21 | APR | 1980 | 2100 | 5.152 | 3864.0 | -59 | 3805.0 |
| 21 | APR | 1980 | 2200 | 5.152 | 3864.0 | -59 | 3805.0 |
| 21 | APR | 1980 | 2300 | 5.152 | 3864.0 | -59 | 3805.0 |
| 22 | APR | 1980 | 0 | 5.153 | 3864.8 | -59 | 3805.8 |
| 22 | APR | 1980 | 100 | 5.153 | 3864.8 | -59 | 3805.8 |
| 22 | APR | 1980 | 200 | 5.154 | 3865.5 | -59 | 3806.5 |
| 22 | APR | 1980 | 300 | 5.154 | 3865.5 | -59 | 3806.5 |
| 22 | APR | 1980 | 400 | 5.154 | 3865.5 | -59 | 3806.5 |
| 22 | APR | 1980 | 500 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 600 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 700 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 800 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 900 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 1000 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 1100 | 5.154 | 3865.5 | -59 | 3806.5 |
| 22 | APR | 1980 | 1200 | 5.154 | 3865.5 | -59 | 3806.5 |
| 22 | APR | 1980 | 1300 | 5.153 | 3864.8 | -59 | 3805.8 |
| 22 | APR | 1980 | 1400 | 5.154 | 3865.5 | -59 | 3806.5 |
| 22 | APR | 1980 | 1500 | 5.154 | 3865.5 | -59 | 3806.5 |
| 22 | APR | 1980 | 1600 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 1700 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 1800 | 5.155 | 3866.3 | -59 | 3807.3 |
| 22 | APR | 1980 | 1900 | 5.155 | 3867.0 | -59 | 3808.0 |
| 22 | APR | 1980 | 2000 | 5.155 | 3867.0 | -59 | 3807.3 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GAT | SECONDS | METERS (UNCORR) | VEL CURR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 22 | APR | 1980 | 2100 | 5.156 | 3867.0 | -59 | 3808.0 |
| 22 | APR | 1980 | 2200 | 5.156 | 3867.0 | -59 | 3808.0 |
| 22 | APR | 1980 | 2300 | 5.156 | 3867.0 | -59 | 3808.0 |
| 23 | APR | 1980 | 0 | 5.158 | 3868.5 | -59 | 3809.5 |
| 23 | APR | 1980 | 100 | 5.157 | 3867.8 | -59 | 3808.8 |
| 23 | APR | 1980 | 200 | 5.157 | 3867.8 | -59 | 3808.8 |
| 23 | APR | 1980 | 300 | 5.158 | 3868.5 | -59 | 3809.5 |
| 23 | APR | 1980 | 400 | 5.158 | 3868.5 | -59 | 3809.5 |
| 23 | APR | 1980 | 500 | 5.157 | 3867.8 | -59 | 3808.8 |
| 23 | APR | 1980 | 600 | 5.157 | 3867.8 | -59 | 3808.8 |
| 23 | APR | 1980 | 700 | 5.156 | 3867.0 | -59 | 3808.0 |
| 23 | APR | 1980 | 800 | 5.158 | 3868.5 | -59 | 3809.5 |
| 23 | APR | 1980 | 900 | 5.155 | 3866.3 | -59 | 3807.3 |
| 23 | APR | 1980 | 1000 | 5.155 | 3866.3 | -59 | 3807.3 |
| 23 | APR | 1980 | 1100 | 5.155 | 3866.3 | -59 | 3807.3 |
| 23 | APR | 1980 | 1200 | 5.153 | 3864.8 | -59 | 3805.8 |
| 23 | APR | 1980 | 1300 | 5.152 | 3864.0 | -59 | 3805.0 |
| 23 | APR | 1980 | 1400 | 5.151 | 3863.3 | -59 | 3804.3 |
| 23 | APR | 1980 | 1500 | 5.150 | 3862.5 | -59 | 3803.5 |
| 23 | APR | 1980 | 1600 | 5.149 | 3861.8 | -59 | 3802.8 |
| 23 | APR | 1980 | 1700 | 5.149 | 3861.8 | -59 | 3802.8 |
| 23 | APR | 1980 | 1800 | 5.148 | 3861.0 | -59 | 3802.0 |
| 23 | APR | 1980 | 1900 | 5.146 | 3859.5 | -59 | 3800.5 |
| 23 | APR | 1980 | 2000 | 5.145 | 3858.8 | -59 | 3799.8 |
| 23 | APR | 1980 | 2100 | 5.145 | 3858.8 | -59 | 3799.8 |
| 23 | APR | 1980 | 2200 | 5.145 | 3858.8 | -59 | 3799.8 |
| 23 | APR | 1980 | 2300 | 5.143 | 3857.3 | -59 | 3798.3 |
| 24 | APR | 1980 | 0 | 5.142 | 3856.5 | -59 | 3797.5 |
| 24 | APR | 1980 | 100 | 5.142 | 3856.5 | -59 | 3797.5 |
| 24 | APR | 1980 | 200 | 5.140 | 3855.0 | -59 | 3796.0 |
| 24 | APR | 1980 | 300 | 5.138 | 3853.5 | -59 | 3794.5 |
| 24 | APR | 1980 | 400 | 5.136 | 3852.0 | -59 | 3793.0 |
| 24 | APR | 1980 | 500 | 5.136 | 3852.0 | -59 | 3793.0 |
| 24 | APR | 1980 | 600 | 5.135 | 3851.3 | -59 | 3792.3 |
| 24 | APR | 1980 | 700 | 5.134 | 3850.5 | -59 | 3791.5 |
| 24 | APR | 1980 | 800 | 5.133 | 3849.8 | -59 | 3789.8 |
| 24 | APR | 1980 | 900 | 5.132 | 3849.0 | -60 | 3795.0 |
| 24 | APR | 1980 | 1000 | 5.131 | 3848.3 | -60 | 3788.3 |
| 24 | APR | 1980 | 1100 | 5.131 | 3848.3 | -60 | 3788.3 |
| 24 | APR | 1980 | 1200 | 5.130 | 3847.5 | -60 | 3787.5 |
| 24 | APR | 1980 | 1300 | 5.128 | 3846.0 | -60 | 3786.0 |
| 24 | APR | 1980 | 1400 | 5.128 | 3844.5 | -60 | 3784.5 |
| 24 | APR | 1980 | 1500 | 5.126 | 3844.5 | -60 | 3784.5 |
| 24 | APR | 1980 | 1600 | 5.124 | 3843.0 | -60 | 3783.0 |
| 24 | APR | 1980 | 1700 | 5.123 | 3842.3 | -60 | 3782.3 |
| 24 | APR | 1980 | 1800 | 5.121 | 3840.8 | -60 | 3780.8 |
| 24 | APR | 1980 | 1900 | 5.121 | 3840.8 | -60 | 3780.8 |
| 24 | APR | 1980 | 2000 | 5.120 | 3840.0 | -60 | 3780.0 |
| 24 | APR | 1980 | 2100 | 5.120 | 3840.0 | -60 | 3780.0 |
| 24 | APR | 1980 | 2200 | 5.119 | 3839.3 | -60 | 3779.3 |
| 24 | APR | 1980 | 2300 | 5.118 | 3838.5 | -60 | 3778.5 |
| 25 | APR | 1980 | 0 | 5.117 | 3837.8 | -60 | 3777.8 |
| 25 | APR | 1980 | 100 | 5.118 | 3838.5 | -60 | 3778.5 |
| 25 | APR | 1980 | 200 | 5.117 | 3837.8 | -60 | 3777.8 |
| 25 | APR | 1980 | 300 | 5.115 | 3836.3 | -60 | 3776.3 |
| 25 | APR | 1980 | 400 | 5.114 | 3835.5 | -60 | 3775.5 |
| 25 | APR | 1980 | 500 | 5.112 | 3834.0 | -60 | 3774.0 |
| 25 | APR | 1980 | 600 | 5.113 | 3834.8 | -60 | 3774.8 |
| 25 | APR | 1980 | 700 | 5.111 | 3833.3 | -60 | 3773.3 |
| 25 | APR | 1980 | 800 | 5.111 | 3833.3 | -60 | 3773.3 |
| 25 | APR | 1980 | 900 | 5.111 | 3833.3 | -60 | 3773.3 |
| 25 | APR | 1980 | 1000 | 5.111 | 3833.3 | -60 | 3773.3 |
| 25 | APR | 1980 | 1100 | 5.111 | 3833.3 | -60 | 3773.3 |
| 25 | APR | 1980 | 1200 | 5.111 | 3833.3 | -60 | 3773.3 |
| 25 | APR | 1980 | 1300 | 5.113 | 3833.3 | -60 | 3773.3 |
| 25 | APR | 1980 | 1400 | 5.117 | 3837.8 | -60 | 3777.8 |
| 25 | APR | 1980 | 1500 | 5.120 | 3840.0 | -60 | 3780.0 |
| 25 | APR | 1980 | 1600 | 5.123 | 3842.3 | -60 | 3782.3 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GMT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 25 | APR | 1980 | 1700 | 5.128 | 3846.0 | -60 | 3786.0 |
| 25 | APR | 1980 | 1800 | 5.130 | 3847.5 | -60 | 3787.5 |
| 25 | APR | 1980 | 1900 | 5.132 | 3849.0 | -60 | 3789.0 |
| 25 | APR | 1980 | 2000 | 5.135 | 3851.3 | -59 | 3792.3 |
| 25 | APR | 1980 | 2100 | 5.138 | 3853.5 | -59 | 3794.5 |
| 25 | APR | 1980 | 2200 | 5.139 | 3854.6 | -59 | 3795.3 |
| 25 | APR | 1980 | 2300 | 5.140 | 3855.0 | -59 | 3796.0 |
| 26 | APR | 1980 | 0 | 5.143 | 3857.3 | -59 | 3798.3 |
| 26 | APR | 1980 | 100 | 5.144 | 3858.0 | -59 | 3799.0 |
| 26 | APR | 1980 | 200 | 5.149 | 3861.8 | -59 | 3802.8 |
| 26 | APR | 1980 | 300 | 5.152 | 3864.0 | -59 | 3805.0 |
| 26 | APR | 1980 | 400 | 5.155 | 3866.3 | -59 | 3807.3 |
| 26 | APR | 1980 | 500 | 5.155 | 3866.3 | -59 | 3807.3 |
| 26 | APR | 1980 | 600 | 5.139 | 3854.3 | -59 | 3795.3 |
| 26 | APR | 1980 | 700 | 5.111 | 3833.3 | -60 | 3773.3 |
| 26 | APR | 1980 | 800 | 5.080 | 3810.0 | -60 | 3750.0 |
| 26 | APR | 1980 | 900 | 5.039 | 3779.3 | -60 | 3719.3 |
| 26 | APR | 1980 | 1000 | 5.021 | 3765.8 | -60 | 3705.8 |
| 26 | APR | 1980 | 1100 | 5.013 | 3759.8 | -60 | 3699.8 |
| 26 | APR | 1980 | 1200 | 5.002 | 3751.5 | -60 | 3691.5 |
| 26 | APR | 1980 | 1300 | 5.001 | 3750.8 | -60 | 3690.8 |
| 26 | APR | 1980 | 1400 | 4.987 | 3740.3 | -60 | 3680.3 |
| 26 | APR | 1980 | 1500 | 4.982 | 3736.5 | -60 | 3676.5 |
| 26 | APR | 1980 | 1600 | 4.977 | 3732.8 | -60 | 3672.8 |
| 26 | APR | 1980 | 1700 | 4.969 | 3726.8 | -60 | 3666.8 |
| 26 | APR | 1980 | 1800 | 4.969 | 3726.8 | -60 | 3666.8 |
| 26 | APR | 1980 | 1900 | 4.962 | 3721.5 | -60 | 3661.5 |
| 26 | APR | 1980 | 2000 | 4.960 | 3720.0 | -60 | 3660.0 |
| 26 | APR | 1980 | 2100 | 4.956 | 3717.0 | -60 | 3657.0 |
| 26 | APR | 1980 | 2200 | 4.953 | 3714.6 | -60 | 3654.8 |
| 26 | APR | 1980 | 2300 | 4.951 | 3713.3 | -60 | 3653.3 |
| 27 | APR | 1980 | 0 | 4.951 | 3713.3 | -60 | 3653.3 |
| 27 | APR | 1980 | 100 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 200 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 300 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 400 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 500 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 600 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 700 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 800 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 900 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 1000 | 4.948 | 3711.0 | -60 | 3651.0 |
| 27 | APR | 1980 | 1100 | 4.947 | 3711.8 | -60 | 3651.8 |
| 27 | APR | 1980 | 1200 | 4.949 | 3711.8 | -60 | 3651.8 |
| 27 | APR | 1980 | 1300 | 4.949 | 3711.8 | -60 | 3651.8 |
| 27 | APR | 1980 | 1400 | 4.949 | 3711.8 | -60 | 3651.8 |
| 27 | APR | 1980 | 1500 | 4.949 | 3711.8 | -60 | 3651.8 |
| 27 | APR | 1980 | 1600 | 4.948 | 3711.0 | -60 | 3651.0 |
| 27 | APR | 1980 | 1700 | 4.948 | 3711.0 | -60 | 3651.0 |
| 27 | APR | 1980 | 1800 | 4.948 | 3711.0 | -60 | 3651.0 |
| 27 | APR | 1980 | 1900 | 4.947 | 3710.3 | -60 | 3650.3 |
| 27 | APR | 1980 | 2000 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 2100 | 4.948 | 3711.0 | -60 | 3651.0 |
| 27 | APR | 1980 | 2200 | 4.950 | 3712.5 | -60 | 3652.5 |
| 27 | APR | 1980 | 2300 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 0 | 4.949 | 3711.8 | -60 | 3651.8 |
| 28 | APR | 1980 | 100 | 4.949 | 3711.8 | -60 | 3651.8 |
| 28 | APR | 1980 | 200 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 300 | 4.949 | 3711.8 | -60 | 3651.8 |
| 28 | APR | 1980 | 400 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 500 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 600 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 700 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 800 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 900 | 4.949 | 3711.8 | -60 | 3651.8 |
| 28 | APR | 1980 | 1000 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 1100 | 4.950 | 3712.5 | -60 | 3652.5 |
| 28 | APR | 1980 | 1200 | 4.953 | 3714.8 | -60 | 3654.8 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GIT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CORR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 28 | APR | 1980 | 1300 | 4.953 | 3714.8 | -60 | 3654.8 |
| 28 | APR | 1980 | 1400 | 4.953 | 3714.8 | -60 | 3654.8 |
| 28 | APR | 1980 | 1500 | 4.953 | 3714.8 | -60 | 3654.8 |
| 28 | APR | 1980 | 1600 | 4.953 | 3714.8 | -60 | 3654.8 |
| 28 | APR | 1980 | 1700 | 4.955 | 3716.3 | -60 | 3656.8 |
| 28 | APR | 1980 | 1800 | 4.960 | 3720.0 | -60 | 3660.0 |
| 28 | APR | 1980 | 1900 | 4.967 | 3725.3 | -60 | 3665.3 |
| 28 | APR | 1980 | 2000 | 4.979 | 3734.3 | -60 | 3674.3 |
| 28 | APR | 1980 | 2100 | 5.000 | 3750.0 | -60 | 3690.0 |
| 28 | APR | 1980 | 2200 | 5.006 | 3754.5 | -60 | 3694.5 |
| 28 | APR | 1980 | 2300 | 5.003 | 3752.3 | -60 | 3692.3 |
| 29 | APR | 1980 | 0 | 5.014 | 3760.5 | -60 | 3700.5 |
| 29 | APR | 1980 | 100 | 5.023 | 3767.3 | -60 | 3707.5 |
| 29 | APR | 1980 | 200 | 5.050 | 3787.5 | -60 | 3727.5 |
| 29 | APR | 1980 | 300 | 5.100 | 3825.0 | -60 | 3765.0 |
| 29 | APR | 1980 | 400 | 5.129 | 3846.8 | -60 | 3786.8 |
| 29 | APR | 1980 | 500 | 5.150 | 3862.5 | -59 | 3803.5 |
| 29 | APR | 1980 | 600 | 5.151 | 3863.3 | -59 | 3804.3 |
| 29 | APR | 1980 | 700 | 5.154 | 3865.5 | -59 | 3806.5 |
| 29 | APR | 1980 | 800 | 5.153 | 3864.8 | -59 | 3805.8 |
| 29 | APR | 1980 | 900 | 5.153 | 3864.8 | -59 | 3805.8 |
| 29 | APR | 1980 | 1000 | 5.151 | 3863.3 | -59 | 3804.3 |
| 29 | APR | 1980 | 1100 | 5.151 | 3863.3 | -59 | 3804.3 |
| 29 | APR | 1980 | 1200 | 5.151 | 3863.3 | -59 | 3804.3 |
| 29 | APR | 1980 | 1300 | 5.150 | 3862.5 | -59 | 3803.5 |
| 29 | APR | 1980 | 1400 | 5.150 | 3862.5 | -59 | 3803.5 |
| 29 | APR | 1980 | 1500 | 5.150 | 3862.5 | -59 | 3803.5 |
| 29 | APR | 1980 | 1600 | 5.149 | 3861.8 | -59 | 3802.8 |
| 29 | APR | 1980 | 1700 | 5.148 | 3861.0 | -59 | 3802.0 |
| 29 | APR | 1980 | 1800 | 5.147 | 3860.3 | -59 | 3801.3 |
| 29 | APR | 1980 | 1900 | 5.149 | 3861.8 | -59 | 3802.8 |
| 29 | APR | 1980 | 2000 | 5.148 | 3861.0 | -59 | 3802.0 |
| 29 | APR | 1980 | 2100 | 5.146 | 3859.5 | -59 | 3800.5 |
| 29 | APR | 1980 | 2200 | 5.145 | 3858.8 | -59 | 3799.8 |
| 29 | APR | 1980 | 2300 | 5.145 | 3858.8 | -59 | 3799.8 |
| 30 | APR | 1980 | 0 | 5.145 | 3858.8 | -59 | 3799.8 |
| 30 | APR | 1980 | 100 | 5.143 | 3857.3 | -59 | 3798.3 |
| 30 | APR | 1980 | 200 | 5.140 | 3855.0 | -59 | 3796.0 |
| 30 | APR | 1980 | 300 | 5.139 | 3854.3 | -59 | 3795.3 |
| 30 | APR | 1980 | 400 | 5.137 | 3852.8 | -59 | 3793.8 |
| 30 | APR | 1980 | 500 | 5.134 | 3850.5 | -59 | 3791.5 |
| 30 | APR | 1980 | 600 | 5.132 | 3849.0 | -60 | 3789.0 |
| 30 | APR | 1980 | 700 | 5.131 | 3848.3 | -60 | 3788.3 |
| 30 | APR | 1980 | 800 | 5.129 | 3846.8 | -60 | 3786.8 |
| 30 | APR | 1980 | 900 | 5.128 | 3846.0 | -60 | 3786.0 |
| 30 | APR | 1980 | 1000 | 5.127 | 3845.3 | -60 | 3785.3 |
| 30 | APR | 1980 | 1100 | 5.125 | 3843.8 | -60 | 3783.8 |
| 30 | APR | 1980 | 1200 | 5.123 | 3842.3 | -60 | 3782.3 |
| 30 | APR | 1980 | 1300 | 5.122 | 3841.5 | -60 | 3781.5 |
| 30 | APR | 1980 | 1400 | 5.121 | 3840.8 | -60 | 3780.8 |
| 30 | APR | 1980 | 1500 | 5.119 | 3839.3 | -60 | 3779.3 |
| 30 | APR | 1980 | 1600 | 5.119 | 3839.3 | -60 | 3779.3 |
| 30 | APR | 1980 | 1700 | 5.117 | 3837.8 | -60 | 3777.8 |
| 30 | APR | 1980 | 1800 | 5.114 | 3835.5 | -60 | 3775.5 |
| 30 | APR | 1980 | 1900 | 5.112 | 3834.0 | -60 | 3774.0 |
| 30 | APR | 1980 | 2000 | 5.110 | 3832.5 | -60 | 3772.5 |
| 30 | APR | 1980 | 2100 | 5.109 | 3831.8 | -60 | 3771.8 |
| 30 | APR | 1980 | 2200 | 5.107 | 3830.3 | -60 | 3770.3 |
| 30 | APR | 1980 | 2300 | 5.106 | 3828.5 | -60 | 3769.5 |
| 1 | MAY | 1980 | 0 | 5.105 | 3828.8 | -60 | 3768.8 |
| 1 | MAY | 1980 | 100 | 5.103 | 3827.3 | -60 | 3767.3 |
| 1 | MAY | 1980 | 200 | 5.102 | 3826.5 | -60 | 3766.5 |
| 1 | MAY | 1980 | 300 | 5.102 | 3826.5 | -60 | 3766.5 |
| 1 | MAY | 1980 | 400 | 5.101 | 3825.8 | -60 | 3765.8 |
| 1 | MAY | 1980 | 500 | 5.101 | 3825.8 | -60 | 3765.8 |
| 1 | MAY | 1980 | 600 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 700 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 800 | 5.100 | 3825.0 | -60 | 3765.0 |

FRAM 2 DEPTH DATA

| DY | MON | YEAR | GMT | SECONDS | METERS (UNCORR) | VEL CORR | METERS (CURR) |
|----|-----|------|------|---------|--------------------|-------------|------------------|
| 1 | MAY | 1980 | 900 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1000 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1100 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1200 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1300 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1400 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1500 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1600 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1700 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1800 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 1900 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 2000 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 2100 | 5.100 | 3825.0 | -60 | 3765.0 |
| 1 | MAY | 1980 | 2200 | 5.101 | 3825.8 | -60 | 3765.8 |
| 1 | MAY | 1980 | 2300 | 5.101 | 3825.8 | -60 | 3765.8 |
| 2 | MAY | 1980 | 0 | 5.101 | 3825.8 | -60 | 3765.8 |
| 2 | MAY | 1980 | 100 | 5.102 | 3826.5 | -60 | 3766.5 |
| 2 | MAY | 1980 | 200 | 5.101 | 3825.8 | -60 | 3765.8 |
| 2 | MAY | 1980 | 300 | 5.100 | 3825.0 | -60 | 3765.0 |
| 2 | MAY | 1980 | 400 | 5.101 | 3825.8 | -60 | 3765.8 |
| 2 | MAY | 1980 | 500 | 5.101 | 3825.8 | -60 | 3765.8 |
| 2 | MAY | 1980 | 600 | 5.102 | 3826.5 | -60 | 3766.5 |
| 2 | MAY | 1980 | 700 | 5.104 | 3828.0 | -60 | 3768.0 |
| 2 | MAY | 1980 | 800 | 5.109 | 3831.8 | -60 | 3771.8 |
| 2 | MAY | 1980 | 900 | 5.113 | 3834.8 | -60 | 3774.8 |
| 2 | MAY | 1980 | 1000 | 5.118 | 3838.5 | -60 | 3778.5 |
| 2 | MAY | 1980 | 1100 | 5.122 | 3841.5 | -60 | 3781.5 |
| 2 | MAY | 1980 | 1200 | 5.125 | 3843.8 | -60 | 3783.8 |
| 2 | MAY | 1980 | 1300 | 5.130 | 3847.5 | -60 | 3787.5 |
| 2 | MAY | 1980 | 1400 | 5.132 | 3849.0 | -60 | 3789.0 |
| 2 | MAY | 1980 | 1500 | 5.138 | 3853.5 | -59 | 3794.5 |
| 2 | MAY | 1980 | 1600 | 5.140 | 3855.0 | -59 | 3796.0 |
| 2 | MAY | 1980 | 1700 | 5.141 | 3855.8 | -59 | 3796.8 |

Gravity

The earth's gravity field was monitored during the station drift with a La Coste and Romberg Model G gravimeter. This instrument has a range of over 7000 milligals, a reading accuracy of ± 0.01 milligal and a drift rate normally less than 1 milligal per month. The instrument used, serial number 27, was especially modified for use on ice floes by the addition of variable damping and electronic readout. Gravity output was monitored continuously with a chart recorder but only those values read directly for calibrating the chart are reported here. The instrument was located in the Lamont residence hut at FRAM II where it was mounted on a wooden pier frozen into the ice floe. The pier extended through a hole in the floor of the hut and was free of any contact with the hut itself. The instrument was at an elevation of 1/2 m above sea level.

The gravity readings were calibrated with readings at Lamont, Thule and Nord. The manufacturer's screw curve for the instrument was checked between the gravity pier in the Oceanography Building at Lamont and Hangar #7 (SE corner, field level) at Thule AFB, Greenland. The difference in gravity between the two points is over 2600 milligals yet the difference based on the manufacturer's screw curve was found to give a gravity tie within 6 milligals of that based on the survey values for these two sites.

| Site | Date | Base Surveyed Value (gals.) | Value based on G-27 Rdgs. (gals.) |
|--------------------|-----------|-----------------------------------|---|
| Thule AFB HGR #7 | 24 Mar 80 | 982.9280 | 982.92205 |
| Lamont Grav. Pier | 7 May 80 | 980.2546 | (980.2546) |
| Gravity Difference | | 2.6734 | 2.66745 |

Gravity based on our gravimeter readings using the screw curve agree with the accepted surveyed values with a difference of 5.95 milligals. This check provided confidence in the manufacturer's screw curve which was used to reduce all observations.

Drift is also a possible potential source of error. Readings were taken at the same site at Thule on both the trip to FRAM II and on return. The relative readings at Thule were:

| | |
|-------------|---------------------|
| 24 March 80 | 6611.36 mgal |
| 5 May 80 | <u>6610.62 mgal</u> |
| Drift | 0.74 mgal |

The drift rate of 1/2 milligal per month is considered negligibly small and no drift corrections were made to the data.

GRAVITY OBSERVATIONS AT FRAM II

Key to column headings:

DY = Day

MON = Month

YEAR = Year

GMT - Greenwich mean time

CTR RDG = Counter reading

MGALS = Relative gravity in milligals

GRAVITY = Absolute gravity value in milligals.

FRAM 2 GRAVITY DATA

| DY | MON | YEAR | GMT | CTR RDG | MGALS | GRAVITY |
|----|-----|------|------|---------|---------|-----------|
| 31 | MAR | 1980 | 1956 | 6551.52 | 6897.85 | 983214.87 |
| 31 | MAR | 1980 | 2235 | 6551.36 | 6897.68 | 983214.69 |
| 1 | APR | 1980 | 57 | 6551.35 | 6897.67 | 983214.69 |
| 1 | APR | 1980 | 824 | 6551.29 | 6897.60 | 983214.62 |
| 1 | APR | 1980 | 1020 | 6551.43 | 6897.75 | 983214.75 |
| 1 | APR | 1980 | 1830 | 6551.12 | 6897.42 | 983214.44 |
| 3 | APR | 1980 | 950 | 6551.43 | 6897.75 | 983214.75 |
| 4 | APR | 1980 | 1303 | 6549.75 | 6895.98 | 983213.00 |
| 4 | APR | 1980 | 2341 | 6549.92 | 6896.16 | 983213.19 |
| 5 | APR | 1980 | 946 | 6550.15 | 6896.40 | 983213.37 |
| 5 | APR | 1980 | 1316 | 6550.30 | 6896.56 | 983213.56 |
| 5 | APR | 1980 | 2330 | 6551.30 | 6897.61 | 983214.62 |
| 6 | APR | 1980 | 1036 | 6551.25 | 6897.56 | 983214.56 |
| 6 | APR | 1980 | 1822 | 6551.10 | 6897.40 | 983214.37 |
| 6 | APR | 1980 | 2217 | 6550.85 | 6897.14 | 983214.37 |
| 7 | APR | 1980 | 1039 | 6550.60 | 6896.88 | 983213.88 |
| 7 | APR | 1980 | 1321 | 6550.57 | 6896.85 | 983213.88 |
| 7 | APR | 1980 | 2142 | 6550.62 | 6896.52 | 983213.50 |
| 8 | APR | 1980 | 857 | 6550.54 | 6896.81 | 983213.81 |
| 8 | APR | 1980 | 1523 | 6550.60 | 6896.88 | 983213.88 |
| 9 | APR | 1980 | 15 | 6550.65 | 6896.93 | 983213.94 |
| 9 | APR | 1980 | 1055 | 6550.70 | 6896.98 | 983214.00 |
| 9 | APR | 1980 | 1522 | 6550.50 | 6896.77 | 983213.75 |
| 9 | APR | 1980 | 2130 | 6550.54 | 6896.81 | 983213.81 |
| 10 | APR | 1980 | 1130 | 6550.58 | 6896.86 | 983213.88 |
| 10 | APR | 1980 | 1530 | 6550.58 | 6896.86 | 983213.86 |
| 10 | APR | 1980 | 2215 | 6550.76 | 6897.05 | 983214.06 |
| 11 | APR | 1980 | 1040 | 6550.76 | 6897.05 | 983214.06 |
| 11 | APR | 1980 | 1715 | 6550.75 | 6897.03 | 983214.00 |
| 11 | APR | 1980 | 2356 | 6550.79 | 6897.08 | 983214.06 |
| 12 | APR | 1980 | 1040 | 6550.79 | 6897.08 | 983214.06 |
| 12 | APR | 1980 | 1712 | 6550.82 | 6897.11 | 983214.13 |
| 12 | APR | 1980 | 2219 | 6550.85 | 6897.14 | 983214.13 |
| 13 | APR | 1980 | 1105 | 6550.83 | 6897.12 | 983214.13 |
| 13 | APR | 1980 | 2210 | 6550.81 | 6897.10 | 983214.13 |
| 14 | APR | 1980 | 30 | 6550.75 | 6897.03 | 983214.00 |
| 14 | APR | 1980 | 1040 | 6550.73 | 6897.01 | 983214.00 |
| 14 | APR | 1980 | 1500 | 6550.73 | 6897.01 | 983214.00 |
| 15 | APR | 1980 | 350 | 6550.55 | 6896.82 | 983213.81 |
| 15 | APR | 1980 | 2023 | 6550.62 | 6896.90 | 983213.88 |
| 16 | APR | 1980 | 955 | 6550.72 | 6897.00 | 983214.00 |
| 16 | APR | 1980 | 1920 | 6550.74 | 6897.02 | 983214.00 |
| 16 | APR | 1980 | 2330 | 6550.79 | 6897.08 | 983214.06 |
| 17 | APR | 1980 | 1135 | 6550.85 | 6897.14 | 983214.13 |
| 17 | APR | 1980 | 1455 | 6550.90 | 6897.19 | 983214.19 |
| 17 | APR | 1980 | 2355 | 6550.88 | 6897.17 | 983214.19 |
| 18 | APR | 1980 | 1116 | 6550.98 | 6897.23 | 983214.25 |
| 18 | APR | 1980 | 1756 | 6552.87 | 6899.27 | 983216.25 |
| 18 | APR | 1980 | 2227 | 6553.62 | 6900.09 | 983217.06 |
| 19 | APR | 1980 | 1145 | 6552.91 | 6899.31 | 983216.31 |
| 19 | APR | 1980 | 1640 | 6552.27 | 6898.64 | 983215.63 |
| 19 | APR | 1980 | 1819 | 6551.09 | 6897.39 | 983214.37 |
| 20 | APR | 1980 | 1230 | 6548.25 | 6893.77 | 983210.75 |
| 20 | APR | 1980 | 1910 | 6548.32 | 6894.45 | 983211.44 |
| 21 | APR | 1980 | 1337 | 6548.44 | 6894.60 | 983211.63 |
| 21 | APR | 1980 | 2045 | 6548.40 | 6892.95 | 983210.00 |
| 22 | APR | 1980 | 112 | 6546.24 | 6892.29 | 983209.31 |
| 22 | APR | 1980 | 1129 | 6543.65 | 6894.59 | 983206.56 |
| 22 | APR | 1980 | 1742 | 6542.11 | 6887.94 | 983174.94 |
| 22 | APR | 1980 | 2229 | 6540.84 | 6886.60 | 983203.62 |
| 23 | APR | 1980 | 1150 | 6536.10 | 6881.61 | 983198.63 |
| 23 | APR | 1980 | 1805 | 6534.90 | 6880.34 | 983197.31 |
| 23 | APR | 1980 | 2052 | 6533.70 | 6879.08 | 983196.06 |
| 23 | APR | 1980 | 2334 | 6533.10 | 6878.45 | 983195.44 |
| 24 | APR | 1980 | 1025 | 6530.42 | 6875.53 | 983192.53 |
| 24 | APR | 1980 | 1219 | 6529.96 | 6875.16 | 983192.19 |
| 24 | APR | 1980 | 1626 | 6528.56 | 6873.77 | 983190.75 |
| 24 | APR | 1980 | 2037 | 6527.00 | 6872.02 | 983189.00 |

FRA 4 2 GRAVITY DATA

| DY | MON | YEAR | GMT | CTR RDG | MGALS | GRAVITY |
|----|-----|------|------|---------|---------|-----------|
| 25 | APR | 1980 | 1203 | 6521.60 | 6866.34 | 983183.31 |
| 25 | APR | 1980 | 1618 | 6518.67 | 6863.25 | 983180.25 |
| 25 | APR | 1980 | 2218 | 6516.33 | 6860.79 | 983177.81 |
| 26 | APR | 1980 | 1350 | 6514.20 | 6858.54 | 983175.56 |
| 26 | APR | 1980 | 1859 | 6513.45 | 6857.75 | 983174.75 |
| 26 | APR | 1980 | 2208 | 6512.78 | 6857.05 | 983174.06 |
| 27 | APR | 1980 | 55 | 6513.04 | 6857.32 | 983174.31 |
| 27 | APR | 1980 | 1322 | 6513.04 | 6857.32 | 983174.31 |
| 27 | APR | 1980 | 1730 | 6513.01 | 6857.29 | 983174.31 |
| 28 | APR | 1980 | 1346 | 6513.06 | 6857.34 | 983174.31 |
| 28 | APR | 1980 | 2129 | 6514.01 | 6858.34 | 983175.31 |
| 28 | APR | 1980 | 2315 | 6514.21 | 6858.55 | 983175.56 |
| 29 | APR | 1980 | 1538 | 6516.50 | 6860.97 | 983178.00 |
| 29 | APR | 1980 | 1904 | 6517.31 | 6861.82 | 983178.81 |
| 29 | APR | 1980 | 2320 | 6518.11 | 6862.66 | 983179.69 |
| 30 | APR | 1980 | 1210 | 6520.58 | 6865.26 | 983182.25 |
| 30 | APR | 1980 | 2128 | 6522.03 | 6866.79 | 983183.81 |
| 1 | MAY | 1980 | 1537 | 6522.85 | 6867.65 | 983184.62 |
| 2 | MAY | 1980 | 518 | 6519.01 | 6863.61 | 983180.62 |

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| 4. TITLE (and Subtitle) OBSERVATIONS OF POSITION, OCEAN DEPTHS, AND GRAVITY TAKEN FROM THE FRAM II AND CAMP I DRIFTING ICE STATIONS | | 5. TYPE OF REPORT & PERIOD COVERED Technical Report |
| | | 6. PERFORMING ORG. REPORT NUMBER CU-13-80 |
| 7. AUTHOR(s) B.Allen, J.Ardai, K.Hunkins, T.Lee, T.O.Manley and W.Tiemann | | 8. CONTRACT OR GRANT NUMBER(s) Contract N00014-76-C- 0004 |
| 9. PERFORMING ORGANIZATION NAME AND ADDRESS Lamont-Doherty Observatory of Columbia U. Palisades, N. Y. | | 10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS NR307-359 |
| 11. CONTROLLING OFFICE NAME AND ADDRESS Office of Naval Research Arctic Programs, Code 461 Arlington, VA. 22217 | | 12. REPORT DATE August 1980 |
| | | 13. NUMBER OF PAGES 60 |
| 14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) | | 15. SECURITY CLASS. (of this report) Unclassified |
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